Draft

Environmental Assessment

Addressing the Addition of 12 KC-135 Aircraft to Fairchild Air Force Base, Washington, or MacDill Air Force Base, Florida

July

2018

DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI)

Environmental Assessment Addressing the Addition of 12 KC-135 Aircraft to Fairchild Air Force Base, Washington, or MacDill Air Force Base, Florida

Proposed Action – Fairchild Air Force Base, Washington

BACKGROUND: The U.S. Air Force (USAF) prepared an Environmental Assessment (EA) to analyze the potential environmental and socioeconomic impacts from adding 12 KC-135 Stratotanker (KC-135) aircraft to the existing fleet of KC-135s at Fairchild Air Force Base (AFB), Washington, or as an alternative, MacDill AFB, Florida. The addition of these aircraft to the selected installation would constitute activation of a new air refueling squadron and would include an increase of KC-135 aircraft; associated personnel and dependents; operations and maintenance activities; and facility construction, demolition, and renovation. The attached EA was prepared in accordance with the National Environmental Policy Act (NEPA); the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (Title 40 Code of Federal Regulations [CFR] §§ 1500–1508); and the USAF regulations for implementing NEPA, *Environmental Impact Analysis Process* (32 CFR § 989, as amended).

PURPOSE OF AND NEED FOR THE PROPOSED ACTION: The purpose of the Proposed Action is to continue to provide Air Mobility Command (AMC) continental U.S. active duty locations with fully capable air refueling assets to accomplish air refueling and related missions. The Proposed Action is needed because USAF must comply with the force adjustments enacted through the Fiscal Year (FY) 2017 National Defense Authorization Act to redistribute 12 KC-135s within the continental United States in FY 2020. USAF needs a viable location to conduct the operations and maintenance activities associated with these 12 KC-135s. Adding 12 KC-135s to a location would require the activation of a new air refueling squadron with associated personnel, dependents, and facilities.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES:

Proposed Action. USAF would add 12 KC-135s to the existing fleet of 36 KC-135s at Fairchild AFB in FY 2020. All 12 additional aircraft would be primary aerospace vehicles authorized for performance of the new squadron's mission under the 92d Air Refueling Wing. The additional KC-135s would be accompanied by approximately 370 personnel and 600 dependents, which would increase the population of Fairchild AFB by approximately 13 percent.

A 33.3 percent increase in KC-135 annual operations and a 16.3 percent increase in total aircraft operations at Fairchild AFB would occur. The proposed operations would occur within existing airspace and training areas currently utilized by KC-135s that operate from Fairchild AFB. No change in airspace would occur. There would be a corresponding increase in aircraft maintenance activities, and aircraft maintenance practices would not change from those currently practiced on the existing fleet of KC-135s at Fairchild AFB.

Facility construction, demolition, and renovation would occur to support the additional KC-135s. Building construction would occur in the form of new buildings and additions onto existing buildings and would add approximately 100,000 square feet (ft^2) of new interior space. Building demolition would occur to remove outdated buildings and would remove approximately 22,000 ft^2 of existing interior space. Parking lot construction and demolition would accompany certain building construction projects and would result in a net reduction of approximately 23,000 ft^2 of paved parking area. Building renovations would be limited to interior updates, and all renovations would occur within existing facility footprints. Building renovation would modify approximately 128,000 ft^2 of existing interior space. Renovations in the form of upgrades to the fuel hydrant system and pavement replacement on the aircraft parking ramp and surrounding Building 1017 would disturb approximately 410,000 ft^2 of existing paved surface. The Proposed Action would disturb a maximum of 718,000 ft^2; however, this area could be smaller because some construction and demolition projects overlap with one another. The Proposed Action would increase the total amount of impervious surfaces on Fairchild AFB by approximately 35,000 ft^2.

Alternatives Evaluation. USAF evaluated other installations under the command of AMC against selection standards to identify potential alternatives to Fairchild AFB as described in Section 2.2 of the EA. The evaluation identified only MacDill AFB as a reasonable alternative to Fairchild AFB; therefore, only Fairchild AFB and MacDill AFB were analyzed in detail in the EA.

MacDill AFB Alternative. USAF would add 12 KC-135s to the existing fleet of 24 KC-135s at MacDill AFB in FY 2020. All 12 additional aircraft would be primary aerospace vehicles authorized for performance of the new squadron's mission under the 6th Air Mobility Wing. The additional KC-135s would be accompanied by approximately 400 personnel and 640 dependents, which would increase the population of MacDill AFB by approximately 3 percent.

A 50.0 percent increase in KC-135 annual operations and a 29.0 percent increase in total aircraft operations at MacDill AFB would occur. The proposed operations would occur within existing airspace and training areas currently utilized by KC-135s that operate from MacDill AFB. No change in airspace would occur. There would be a corresponding increase in aircraft maintenance activities, and aircraft maintenance practices would not change from those currently practiced on the existing fleet of KC-135s at MacDill AFB.

Facility construction, demolition, and renovation would occur to support the additional KC-135s. Building construction would occur in the form of new buildings and additions onto existing buildings and would add approximately 121,500 ft^2 of new interior space. Building demolition would occur to make space for new construction and would remove approximately 4,000 ft^2 of existing building footprint. Parking lot construction and demolition would accompany certain building construction projects and would result in a net reduction of approximately 22,500 ft^2 of paved parking area. Building renovations would be limited to interior updates, and all renovations would occur within existing facility footprints. Building renovation would modify

approximately 158,000 ft^2 of existing interior space. Renovations in the form of pavement repair and upgrades to the fuel hydrant system would occur on the North Ramp and could disturb as much as 1,350,000 ft^2 of existing paved surface. The MacDill AFB Alternative would disturb a maximum of 1,700,000 ft^2; however, this area could be smaller because some construction and demolition projects overlap with one another and the proposed renovations to Hangar 2 and the North Ramp would likely occur on a small fraction of the total area of these facilities. The MacDill AFB Alternative would increase the total amount of impervious surfaces on MacDill AFB by approximately 105,000 ft^2.

No Action Alternative. CEQ regulations recommend consideration of the No Action Alternative. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and other potential action alternatives can be evaluated. Under the No Action Alternative, USAF would not add 12 KC-135s and activate a new air refueling squadron at Fairchild AFB or MacDill AFB. No additional aircraft, personnel and dependents, or operations and maintenance activities would be added to either installation. No facility construction, demolition, or renovation would occur.

Identification of the Preferred Alternative. The Preferred Alternative is the alternative that USAF believes best satisfies the purpose and need and would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors. USAF has identified the Proposed Action as the Preferred Alternative.

ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION: The analysis of environmental impacts focused on the following environmental resources: air quality, biological resources, cultural resources, geological resources, hazardous materials and wastes, infrastructure and transportation, noise, land use, safety, socioeconomics, environmental justice and sensitive receptors, and water resources. A cumulative impacts assessment was also conducted. Details of the environmental consequences are provided in the EA and are incorporated by reference. The analysis in the EA for each of the environmental resource areas identified negligible to moderate adverse impacts under the Proposed Action; therefore, environmental impacts would not be significant.

STAKEHOLDER INVOLVEMENT: Based on the description of the Proposed Action as set forth in the EA, all activities were found to comply with the criteria or standards of environmental quality and were coordinated with the appropriate federal, state, and local agencies. The attached EA and this FONSI will be made available to the public for a 30-day comment period. Comments will be incorporated into the analysis of potential environmental impacts performed as part of the EA as appropriate.

FINDING OF NO SIGNIFICANT IMPACT: Based on the information and analysis presented in the EA, which was prepared in accordance with the requirements of the NEPA and CEQ and USAF NEPA regulations, and review of the public and agency comments submitted during the 30-day public comment period, I conclude that the environmental effects of implementing the Proposed Action at Fairchild AFB, Washington, are not significant, preparation of an Environmental Impact Statement is unnecessary, and a FONSI is appropriate.

APPROVED:

<Unsigned for Draft EA>	<Undated for Draft EA>
NAME, Colonel, USAF	DATE
Commander, 92d Air Refueling Wing	

Attachment: *Environmental Assessment Addressing the Addition of 12 KC-135 Aircraft to Fairchild Air Force Base, Washington, or MacDill Air Force Base, Florida*

ABBREVIATIONS AND ACRONYMS

°F	degrees Fahrenheit
ACAM	Air Conformity Applicability Model
ACMs	asbestos-containing materials
AFB	Air Force Base
AFI	Air Force Instruction
AGL	above ground level
AICUZ	Air Installation Compatible Use Zone
AMC	Air Mobility Command
AMW	Air Mobility Wing
AOZ	Airport Overlay Zone
APE	Area of Potential Effect
APZ	Accident Potential Zone
ARW	Air Refueling Wing
AST	aboveground storage tank
BASH	Bird/Wildlife Aircraft Strike Hazard
BGEPA	Bald and Golden Eagle Protection Act
bgs	below ground surface
BMP	best management practice
C&D	construction and demolition
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
CVI	commercial vehicle inspection
CWA	Clean Water Act
CZ	Clear Zone
CZMA	Coastal Zone Management Act
dB	decibels
dBA	A-weighted decibels
DNL	Day-night Sound Level
DoD	Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESCP	Erosion and Sediment Control Plan
ESQD	explosive safety quantity-distance
FAC	Florida Administrative Code
FCMP	Florida Coastal Management Program
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
FGUA	Florida Government Utility Authority
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
ft^2	square foot/feet
FY	fiscal year
GHG	greenhouse gas
gpd	gallons per day
HABS	Historic American Buildings Survey
I	Interstate
IDP	Installation Development Plan
ISWMP	Integrated Solid Waste Management Plan
JLUS	Joint Land Use Study
KC-135	KC-135 Stratotanker
KC-46A	KC-46A Pegasus
kV	kilovolt

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LBP	lead-based paint
L_{eq}	Equivalent Sound Level
LUC	land use control
MBTA	Migratory Bird Treaty Act
mgd	million gallons per day
MMRP	Military Munitions Response Program
MS4	municipal separate storm sewer system
MSA	Metropolitan Statistical Area
MSGP	Multi-Sector General Permit
MSL	mean sea level
MW	megawatt
MWh	megawatt hour
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation
NRHP	National Register of Historic Places
O_3	ozone
OSHA	Occupational Safety and Health Administration
PAA	primary aerospace vehicles authorized
PCB	polychlorinated biphenyl
pCi/L	picocuries per liter
percent g	percentage of the force of gravity
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
POL	petroleum, oil, and lubricant
POV	privately owned vehicle
PPE	personal protective equipment
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
ROI	region of influence
SHPO	State Historic Preservation Officer
SO_2	sulfur dioxide
SRCAA	Spokane Regional Clean Air Agency
STEP	Spokane Tribe Economic Project
SWPPP	Stormwater Pollution Prevention Plan
TECO	Tampa Electric Company
tpy	tons per year
UFC	Unified Facilities Criteria
USAF	U.S. Air Force
USAR	U.S. Army Reserve
USC	United States Code
USEIA	U.S. Energy Information Administration
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UXO	unexploded ordnance
VOC	volatile organic compounds
WAC	Washington Administrative Code
WWTP	wastewater treatment plant

Cover Sheet

Draft
Environmental Assessment
Addressing the Addition of 12 KC-135 Aircraft to
Fairchild Air Force Base, Washington, or
MacDill Air Force Base, Florida

Responsible Agencies: U.S. Air Force (USAF); Air Mobility Command; Air Force Civil Engineering Center; 92d Air Refueling Wing; 6th Air Mobility Wing.

Affected Location: Fairchild Air Force Base (AFB), Washington, and MacDill AFB, Florida.

Report Designation: Draft Environmental Assessment (EA).

Abstract: USAF and Air Mobility Command propose to add 12 KC-135 Stratotanker (KC-135) aircraft to the existing fleet of KC-135s at Fairchild AFB or, as an alternative, MacDill AFB. The addition of these aircraft to the selected installation would constitute activation of a new air refueling squadron and would include an increase of KC-135 aircraft; associated personnel and dependents; operations and maintenance activities; and facility construction, demolition, and renovation. This EA analyzes the potential for environmental impacts associated with the Proposed Action and alternatives, including the No Action Alternative, and aids in determining whether a Finding of No Significant Impact can be prepared or an Environmental Impact Statement is required.

Comments and inquiries regarding this document should be directed by mail to Ms. Jean Reynolds, AFCEC/CZN, 2261 Hughes Avenue, Suite 155, Joint Base San Antonio-Lackland, Texas 78236-9853.

Privacy Notice

Comments on this document are requested. Letters or other written comments provided may be published in the EA. Any personal information provided will be used only to identify a desire to make a statement during the public comment period or to fulfill requests for copies of the EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the EA. However, only the names of the individuals making comments and specific comments will be disclosed; personal home addresses and telephone numbers will not be published in the EA.

DRAFT

ENVIRONMENTAL ASSESSMENT
ADDRESSING THE
ADDITION OF 12 KC-135 AIRCRAFT TO
FAIRCHILD AIR FORCE BASE, WASHINGTON, OR
MACDILL AIR FORCE BASE, FLORIDA

AIR FORCE CIVIL ENGINEER CENTER
2261 HUGHES AVENUE, SUITE 155
JOINT BASE SAN ANTONIO-LACKLAND, TEXAS 78236

JULY 2018

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1. Purpose of and Need for the Proposed Action

1.1 Introduction

The U.S. Air Force (USAF) and Air Mobility Command (AMC) propose to add 12 KC-135 Stratotanker (KC-135) aircraft to the existing fleet of KC-135s at Fairchild Air Force Base (AFB), Washington, or as an alternative, MacDill AFB, Florida. This Environmental Assessment (EA) analyzes the potential for environmental and socioeconomic impacts from this Proposed Action and alternatives, including the No Action Alternative. This EA has been prepared in accordance with the National Environmental Policy Act (NEPA); the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (Title 40 Code of Federal Regulations [CFR] §§ 1500–1508); and the USAF regulations for implementing NEPA (32 CFR § 989, as amended).

1.2 AMC and KC-135 Program Background

AMC is a USAF major command. AMC's mission is to provide rapid, global mobility and sustainment for America's armed forces. The command also plays a crucial role in providing humanitarian support in the United States and around the world. AMC personnel provide airlift and aerial refueling for all U.S. armed forces. Air refuelers are the backbone of enabling global reach, increasing U.S. and coalition aircrafts' range mid-air (AMC 2017).

The KC-135 and KC-10 Extender currently provide the core aerial refueling capability for the USAF. The KC-135 has excelled in this role for more than 50 years and is anticipated to continue to fulfill this mission need for many years to come even as the USAF's air refueler fleet is progressively recapitalized with KC-46A Pegasus (KC-46A) aircraft. The KC-135 is capable of transporting medical patients using support pallets during aeromedical evacuations. Depending on fuel storage configuration, the KC-135 can carry up to 83,000 pounds of cargo (USAF 2014a).

1.3 Project Location and Background

Fairchild AFB is a 5,823-acre USAF installation under the command of AMC. It is located in Spokane County, Washington, approximately 12 miles west of the City of Spokane (see **Figure 1-1**). The 92d Air Refueling Wing (ARW) is the host unit at Fairchild AFB, which consists of the 92d Operations Group, the 92d Maintenance Group, the 92d Mission Support Group, the 92d Medical Group, and wing staff agencies. Fairchild AFB is also home to the 141st ARW; the 336th Training Group, which operates the USAF Survival, Evasion, Resistance, and Escape School; Armed Forces Reserve Center; and the Joint Personnel Recovery Agency (Fairchild AFB 2014a). The 92d ARW and 141st ARW currently operate 36 KC-135s. These 36 aircraft are primary aerospace vehicles authorized (PAA) for performance of the wings' mission. An additional eight backup aerospace vehicle inventory KC-135s are assigned to Fairchild AFB.

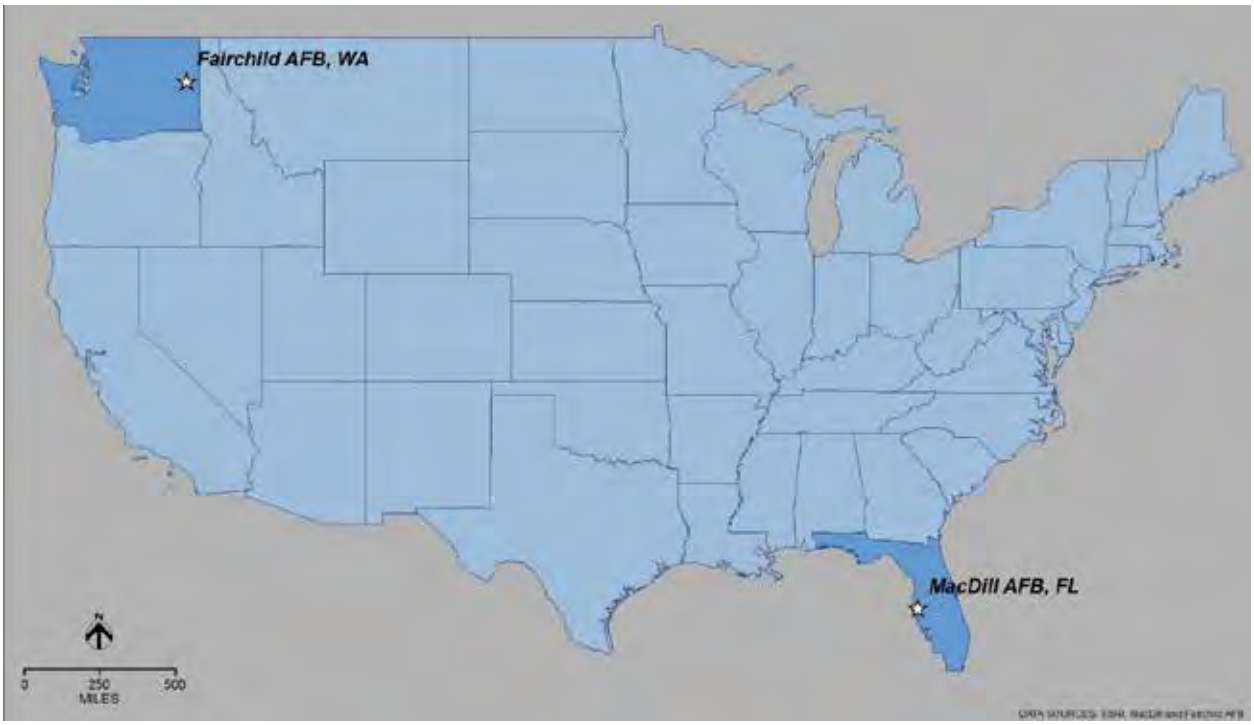

Figure 1-1. Locations of Fairchild AFB and MacDill AFB

MacDill AFB is a 5,696-acre USAF installation under the command of AMC. It is located in Hillsborough County, Florida, approximately 8 miles south of downtown Tampa (see **Figure 1-1**). The installation is at the southern tip of Interbay Peninsula. MacDill AFB is home to the 6th Air Mobility Wing (AMW), which is comprised of the 6th Operations Group, the 6th Maintenance Group, the 6th Mission Support Group, the 6th Medical Group, and wing staff agencies. In addition to the 6th AMW, MacDill AFB also hosts mission partners, including the 927th ARW, U.S. Central Command, and U.S. Special Operations Command (MacDill AFB 2017a). Prior to Fiscal Year (FY) 2018, the 6th AMW and 927th ARW operated 16 KC-135s. An additional 8 KC-135s were added to the installation during FY 2018 under a separate action. All 24 KC-135s at MacDill AFB are PAA, and no backup aerospace vehicle inventory KC-135s are assigned to the installation.

1.4 Purpose of and Need for the Proposed Action

The purpose of this Proposed Action is to continue to provide AMC continental U.S. active duty locations with fully capable air refueling assets to accomplish air refueling and related missions. The Proposed Action is needed because USAF must comply with the force adjustments enacted through the FY 2017 National Defense Authorization Act to redistribute 12 KC-135s within the continental United States in FY 2020. USAF needs a viable location to conduct the operations and maintenance activities associated with these 12 KC-135s. Adding 12 KC-135s to a location would require the activation of a new air refueling squadron with associated personnel, dependents, and facilities.

1.5 NEPA Compliance Requirements

NEPA is a federal law requiring the analysis of potential environmental impacts associated with proposed federal actions before the actions are taken. The intent of NEPA is to make decisions informed by potential environmental consequences and take actions to protect, restore, or enhance the environment. NEPA established the CEQ, which is responsible for ensuring federal agency compliance with NEPA. CEQ NEPA regulations specify that an EA be prepared to determine whether to prepare a Finding of No Significant Impact (FONSI) or an Environmental Impact Statement (EIS). An EA can aid in an agency's compliance with NEPA when an EIS is unnecessary and facilitate preparation of an EIS when one is required.

CEQ regulations mandate all federal agencies to use a prescribed approach to environmental impact analysis. The approach includes an evaluation of the potential environmental consequences associated with a proposed action and considers alternative courses of action.

USAF NEPA regulations under 32 CFR § 989 provide procedures for environmental impact analysis to comply with NEPA and CEQ regulations. Air Force Policy Directive 32-70, *Environmental Quality*, states USAF will comply with applicable federal, state, and local environmental laws and regulations, including NEPA. If significant impacts from a proposed action were predicted under NEPA, USAF would decide whether to conduct mitigation to reduce impacts below the level of significance, prepare an EIS, or abandon the proposed action. An EA is also used to guide USAF in implementing a proposed action in a manner consistent with USAF standards for environmental stewardship should that proposed action be approved for implementation.

Executive Order (EO) 11988 and EO 11990 require that a Finding of No Practicable Alternative (FONPA) accompany a FONSI for actions that involve action in a floodplain or new construction in a wetland. The FONPA provides a discussion for why no practicable alternatives exist for avoiding impacts on these resources. A FONPA is approved by the applicable USAF major command. A FONPA would be necessary for the addition of these KC-135s to MacDill AFB because most of that installation is within the 100-year floodplain.

1.6 Intergovernmental and Native American Tribal Coordination and Consultation and Public Involvement

1.6.1 Interagency and Intergovernmental Coordination and Consultation

EO 12372, *Intergovernmental Review of Federal Programs*, as amended by EO 12416 with the same title, requires federal agencies to provide opportunities for consultation with officials of state and local governments that could be affected by a federal proposal. Through the interagency and intergovernmental coordination process, USAF notifies relevant federal, state, and local agencies of a proposed action and alternatives and provides them with sufficient time to make known their environmental concerns specific to the action. The process also provides USAF with the opportunity to cooperate with and consider state and local views in implementing the federal proposal.

The Draft EA and Draft FONSI/FONPA will be made available to relevant federal, state, and local government agencies for a 30-day review period. The list of federal, state, and local government agencies and signed copies of distribution letters and government agency comments are included in **Appendix A**. Government agency comments will be considered in the development of the Final EA and prior to a decision being made on whether or not to sign the FONSI/FONPA and proceed with the Proposed Action or its alternatives.

1.6.2 Government to Government Coordination and Consultation

The National Historic Preservation Act (NHPA), 54 United States Code (USC) 300101 et seq., requires federal agencies to consult with Native American tribal governments to identify cultural resources that may be adversely affected by the agency's proposed action. Consistent with the NHPA, Department of Defense (DoD) Instruction 4710.02, *Interactions with Federally-Recognized Tribes*, and Air Force Instruction (AFI) 90-2002, *Air Force Interaction with Federally-Recognized Tribes*, federally recognized tribes that are historically affiliated with the Fairchild AFB or MacDill AFB geographic regions have been invited to consult on all proposed undertakings that potentially affect properties of cultural, historical, or religious significance to the tribes. The tribal consultation process is distinct from NEPA consultation or the interagency coordination process. The timelines for tribal consultation are also distinct from those of other consultations. The Native American tribal governments that will be coordinated with regarding the Proposed Action and alternatives are listed in **Appendix A** along with all USAF correspondence and any responses that are received.

1.6.3 Public Involvement

NEPA requirements help ensure that environmental information is made available to the public during the decision-making process and prior to actions being taken. The premise of NEPA is that the quality of federal decisions will be enhanced if proponents provide information to the public and involve the public in the planning process.

A Notice for Early Public Review was published in the *Tampa Bay Times* on Monday, March 26, 2018, because areas of the MacDill AFB Alternative are within the 100-year floodplain. The notice appeared in the local section of the Hillsborough and Pinellas counties editions. A copy of the notice is included in **Appendix A**. No public comments were received from the notice.

A notice of availability announcing the Draft EA and Draft FONSI/FONPA are available for a 30-day comment period will be published in the *Spokesman-Review* and *Tampa Bay Times*. A copy of both newspapers notices are included in **Appendix A**. The Draft EA and Draft FONSI/FONPA will be made available in electronic format on the Fairchild AFB and MacDill AFB websites and in hardcopy format at the Fairchild AFB Library, Spokane Public Library, and Airway Heights Library in Washington and at the MacDill AFB Library and John F. Germany Public Library in Tampa, Florida. Public comments received on the Draft EA and Draft FONSI/FONPA will be considered in the development of the Final EA and prior to a decision being made on whether or not to sign the FONSI/FONPA and proceed with the Proposed Action or its alternatives.

2. Description of the Proposed Action and Alternatives

The NEPA process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action as discussed in **Section 1.5**. This section describes the Proposed Action and alternatives considered, including the No Action Alternative.

2.1 Proposed Action

USAF would add 12 KC-135s to the existing fleet of 36 KC-135s at Fairchild AFB in FY 2020. The addition of these aircraft would constitute activation of a new air refueling squadron under the 92d ARW and includes the following distinct components:

- Increase KC-135 aircraft stationed at Fairchild AFB.
- Increase associated personnel and dependents assigned to Fairchild AFB.
- Increase KC-135 operations and maintenance activities performed at Fairchild AFB.
- Perform facility construction, demolition, and renovation.

The following paragraphs provide additional details regarding each component of the Proposed Action.

Aircraft. The addition of 12 KC-135s would result in 48 KC-135s operating from Fairchild AFB. All 12 additional aircraft would be PAA for performance of the squadron's mission. They would not be considered backup aerospace vehicle inventory, and no changes to the backup aerospace vehicle inventory of KC-135s would occur. The 12 aircraft would be gradually added to the installation during FY 2020, and all aircraft would be operational by September 30, 2020.

Personnel and Dependents. A total of 370 personnel would accompany the additional KC-135s. The additional personnel would consist of 369 active duty military positions and 1 civilian position. The personnel would consist of 99 operations, 246 maintenance, and 25 mission support group authorizations. Accompanying dependents are estimated at 2.5 times 65 percent of the active duty military personnel. Therefore, the 369 active duty military personnel would be accompanied by 600 dependents. Consequently, a total of 970 personnel and dependents would accompany the KC-135s in FY 2020. The current population of Fairchild AFB is 7,565 (5,248 personnel and 2,317 dependents) (AMC 2016). Therefore, the Proposed Action would increase the Fairchild AFB population by 12.8 percent.

Aircraft Operations and Maintenance. The Proposed Action includes a 33.3 percent increase in the number of KC-135 annual operations at Fairchild AFB, to include landings/take-offs and closed patterns, once the aircraft are added in FY 2020. The addition of this squadron would result in a 16.3 percent increase in total aircraft operations at Fairchild AFB. **Table 2-1** provides a summary of the proposed increases in KC-135 operations at Fairchild AFB.

Table 2-1. KC-135 Operations at Fairchild AFB

	Average KC-135 Operations [Annual (Daily)]		
	Landing/Take-Off Operations	**Closed Pattern Operations**	**Total Operations**
Existing	2,948 (8.1)	11,965 (32.8)	**14,913 (40.9)**
Increase	983 (2.7)	3,988 (10.9)	**4,971 (13.6)**
Total	**3,931 (10.8)**	**15,953 (43.7)**	**19,884 (54.5)**

The proposed operations would occur within existing airspace and training areas currently utilized by KC-135s that operate from Fairchild AFB. A change in airspace would not occur under the Proposed Action.

There would be a corresponding (i.e., 33.3 percent) increase in aircraft maintenance activities following the addition of these KC-135s to Fairchild AFB. Aircraft maintenance practices would not change from those currently practiced on the existing fleet of KC-135s at Fairchild AFB.

Facility Construction, Demolition, and Renovation. Facility construction, demolition, and renovation would occur to support operations and maintenance of the additional KC-135s and to provide parking and office space for associated personnel at Fairchild AFB. Building construction would occur in the form of new buildings and additions onto existing buildings and would add 99,207 square feet (ft^2) of new interior space to Fairchild AFB. Building demolition would occur to remove outdated buildings and would remove 21,807 ft^2 of existing interior space from the installation. Parking lot construction and demolition would accompany certain building construction projects and would result in a net reduction of 22,529 ft^2 of paved parking area from Fairchild AFB. Building renovations would be limited to interior updates, and all renovations would occur within existing facility footprints. Building renovation would modify 127,392 ft^2 of existing interior space. Renovations in the form of upgrades to the fuel hydrant system and pavement replacement of the aircraft parking ramp and surrounding Building 1017 would disturb 409,451 ft^2 of existing paved surface.

In total, the Proposed Action would disturb a maximum of 717,247 ft^2; however, this area could be smaller because some construction and demolition projects overlap with one another. The Proposed Action would increase the total amount of impervious surfaces on Fairchild AFB by 34,172 ft^2 and would increase the amount of interior space by 77,400 ft^2. **Figure 2-1** shows the locations of the proposed construction, demolition, and renovation under the Proposed Action, and **Table 2-2** provides a summary of these projects.

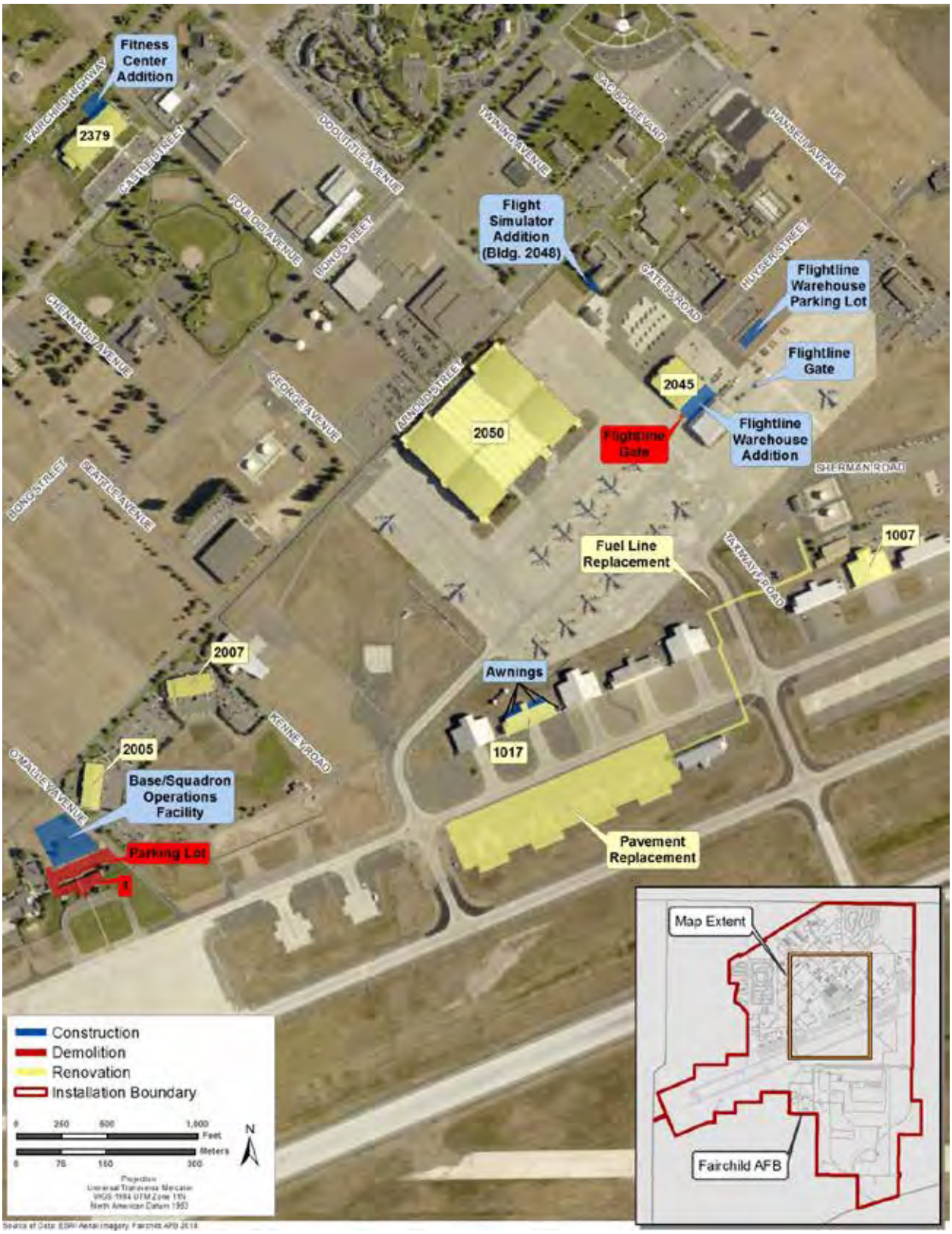

Figure 2-1. Proposed Construction, Demolition, and Renovation at Fairchild AFB

Table 2-2. Proposed Construction, Demolition, and Renovation at Fairchild AFB

Location	Timeline	Description	Area of Disturbance	Change in Impervious Surfaces
Building 1 (Base and Squadron Operations Facility)	2020	Construct a new base/squadron operations facility. The new facility would be sited partially on a parking lot and landscaped field north of Building 1. The existing base/squadron operations facility (i.e., Building 1) would be demolished following construction of the proposed facility.	Construction: - New facility (62,258 ft^2) Demolition: - Building 1 (21,807 ft^2) - Parking lot (33,777 ft^2)	+ 6,674 ft^2
Building 1007 (Primary Fuel Cell)	2019	Renovate the interior of Building 1007 for conversion to the installation's primary fuel cell.	Renovation: - Building 1007 (32,000 ft^2)	0 ft^2
Building 1017 (Central Tool Kit)	2019	Renovate the interior and exterior of Building 1017 to provide a new Central Tool Kit. Four new awnings would be constructed onto the sides of the building, and pavement beneath and immediately adjacent to the proposed awnings would be replaced. Roll-up hangar doors would be installed.	Construction: - Four awnings (7,965 ft^2) Renovation: - Building 1017 (27,749 ft^2) - Pavement replacement (9,451 ft^2)	0 ft^2
Building 2005 (Refueling Squadron and Aircraft Maintenance Personnel)	2019	Renovate the bottom floor of Building 2005 to accommodate additional air refueling squadron and aircraft maintenance personnel.	Renovation: - Building 2005 (25,545 ft^2)	0 ft^2
Building 2007 (Aircraft Maintenance Unit)	2021	Renovate the bottom floor of Building 2007 to accommodate the added aircraft maintenance unit.	Renovation: - Building 2007 (26,900 ft^2)	0 ft^2
Building 2045 (Flightline Warehouse)	2020	Construct an addition onto the southeast face of Building 2045 to provide additional storage space for flightline supplies and equipment. A portion of Building 2045 would be renovated with high efficiency shelving. A gate onto the flightline would be relocated, and a new parking lot would be constructed.	Construction: - Addition to Building 2045 (20,699 ft^2) - Parking lot (11,248 ft^2) Renovation: - Building 2045 (1,798 ft^2)	+11,248 ft^2

Location	Timeline	Description	Area of Disturbance	Change in Impervious Surfaces
Building 2048 (Flight Simulator)	2019	Construct an addition onto the southwest face of Building 2048 to provide an additional flight simulator bay and office space.	Construction: - Addition to Building 2048 (4,250 ft^2)	+ 4,250 ft^2
Building 2050 (Hangar Bay)	2019	Renovate a small portion of the interior of Building 2050 to provide additional space for aircraft maintenance personnel.	Renovation: - Building 2050 (3,400 ft^2)	0 ft^2
Building 2379 (Fitness Center)	2020	Construct an addition on the northwest face of Building 2379 to provide additional indoor fitness/athletic space. Renovate a portion of Building 2379 to reconfigure the basketball court.	Construction: - Addition to Building 2379 (12,000 ft^2) Renovation: - Building 2379 (10,000 ft^2)	+12,000 ft^2
Aircraft Parking Ramp	2020	Demolish and replace pavement on the parking ramp at aircraft parking spots 25 to 28. Replace approximately 3,200 linear feet of fuel line from Building 2028 to Spot 28. Install 1,200 linear feet of looped fuel hydrant system and replace existing hydrants for Spots 25 to 28.	Renovation: - Pavement replacement (400,000 ft^2) - Fuel line replacement (6,400 ft^2)	0 ft^2
Total Area			**717,247 ft^2**	**+34,172 ft^2**

2.2 Alternatives

Guidance for complying with NEPA requires an assessment of potentially effective and reasonably feasible alternatives for implementing the Proposed Action. Consideration of alternatives helps to avoid unnecessary impacts and allows for an analysis of reasonable ways to achieve a purpose.

To warrant detailed evaluation in this EA, an alternative must be reasonable. Reasonable alternatives are those that are practical or feasible from a technical and economic standpoint and use common sense, rather than simply being desirable from the standpoint of the applicant. To be reasonable, an alternative must meet the purpose of and need for the action, be feasible and able to be implemented, and be suitable for consideration by decision makers.

2.2.1 Selection Criteria for Installation Alternatives

USAF considered the other installations under the command of AMC as potential alternatives to Fairchild AFB. The installations considered needed to meet the following selection criteria to be reasonable alternatives:

- The installation must be within the continental United States.

- The installation must currently host active duty KC-135s. Active duty KC-135 installations already possess operations, maintenance, and installation manpower knowledgeable of air refueling with KC-135s; support 24/7 flight operations; and are in proximity to KC-135 training areas.
- The installation must not have been selected to receive a KC-46A mission.
- The installation must have available space (i.e., building and installation area) that can be reconfigured to accommodate additional personnel and maintenance activities.
- The installation must possess satisfactory infrastructure, such as hangar and apron space, runway length and weight-bearing capacity, and fuel storage and receipt capacity, to accommodate the additional aircraft.

Table 2-3 summarizes the evaluation of installations against the selection criteria. Those installations that met a given selection criterion are identified with a "Yes" and those that have not met the selection criterion are identified with a "No." Because Fairchild AFB and MacDill AFB were the only installations to meet the first three selection criteria, USAF only conducted space availability and infrastructure satisfaction evaluations for these two installations. As such, the remaining installations are listed as "Not Evaluated" in **Table 2-3** for the available space and satisfactory infrastructure selection criteria.

Table 2-3. Evaluation of Installation Alternatives against Selection Criteria

Installation	Selection Criteria				
	Continental United States	**Host Active Duty KC-135s**	**Not Selected for KC-46A Mission**	**Available Space**	**Satisfactory Infrastructure**
Proposed Action – Fairchild AFB	Yes	Yes	Yes, but alternative site for future mission	Yes	Yes
Dover AFB	Yes	No	Yes	Not Evaluated	Not Evaluated
Joint Base Charleston	Yes	No	Yes	Not Evaluated	Not Evaluated
Joint Base Lewis-McChord	Yes	No	Yes	Not Evaluated	Not Evaluated
Joint Base McGuire-Dix-Lakehurst	Yes	No	Yes, but preferred site for future mission	Not Evaluated	Not Evaluated
Little Rock AFB	Yes	No	Yes	Not Evaluated	Not Evaluated
MacDill AFB	Yes	Yes	Yes	Yes	Yes
McConnell AFB	Yes	Yes	No	Not Evaluated	Not Evaluated
Scott AFB	Yes	No	Yes	Not Evaluated	Not Evaluated
Travis AFB	Yes	No	Yes, but preferred site for future mission	Not Evaluated	Not Evaluated

2.2.2 Evaluation and Selection of Installation Alternatives

The evaluation of the other installations against the selection criteria identified MacDill AFB as a reasonable alternative to Fairchild AFB (see **Table 2-3**). MacDill AFB meets all five selection criteria presented in **Section 2.2.1** as it is within the continental United States, currently hosts active duty KC-135s, has not been selected to receive a KC-46A mission, and has available space and satisfactory infrastructure to accommodate the additional aircraft, personnel, and maintenance activities. As identified in **Table 2-3**, no other installations met all of the selection criteria. Therefore, only Fairchild AFB and MacDill AFB have been carried forward for detailed evaluation in this EA. The MacDill AFB Alternative is described in detail in **Section 2.2.2.1**.

2.2.2.1 MACDILL AFB ALTERNATIVE

USAF would add 12 KC-135s to the existing fleet of 24 KC-135s at MacDill AFB in FY 2020. Similar to the Proposed Action, the addition of these aircraft would constitute activation of a new air refueling squadron under the 6th AMW and includes the following distinct components:

- Increase KC-135 aircraft stationed at MacDill AFB.
- Increase associated personnel and dependents assigned to MacDill AFB.
- Increase KC-135 operations and maintenance activities performed at MacDill AFB.
- Perform facility construction, demolition, and renovation.

The following paragraphs provide additional details regarding each component of the MacDill AFB Alternative.

Aircraft. The addition of 12 KC-135s under the MacDill AFB Alternative would result in a total of 36 KC-135s stationed at MacDill AFB. All 12 additional aircraft would be PAA for performance of the squadron's mission. They would not be considered backup aerospace vehicle inventory. The 12 aircraft would be gradually added to the installation during FY 2020, and all aircraft would be operational by September 30, 2020.

Personnel and Dependents. A total of 395 personnel would accompany the additional KC-135s. The additional personnel would consist of 394 active duty military positions and 1 civilian position. The active duty military personnel would consist of 106 operations, 263 maintenance, and 25 mission operation support group authorizations. Accompanying dependents are estimated at 2.5 times 65 percent of the active duty military personnel. Therefore, the 394 active duty military personnel would be accompanied by 640 dependents. Consequently, a total of 1,035 personnel and dependents would accompany the KC-135s in FY 2020. The current population of MacDill AFB is 42,023 (18,853 personnel and 23,170 dependents) (MacDill AFB 2014). Therefore, the MacDill AFB Alternative would increase the MacDill AFB population by 2.5 percent.

Aircraft Operations and Maintenance. The MacDill AFB Alternative includes a 50.0 percent increase in the number of KC-135 annual operations at MacDill AFB, to include landings/take-offs and closed patterns, once the aircraft are added in FY 2020. The addition of this squadron would result in a 29.0 percent increase in total aircraft operations at MacDill AFB. **Table 2-4** provides a summary of the proposed increases in KC-135 operations at MacDill AFB.

Table 2-4. KC-135 Operations at MacDill AFB

	Average KC-135 Operations [Annual (Daily)]		
	Landing/Take-Off Operations	**Closed Pattern Operations**	**Total Operations**
Existing	4,210 (11.5)	17,159 (47.0)	**21,369 (58.5)**
Increase	2,105 (5.8)	8,580 (23.5)	**10,685 (29.3)**
Total	**6,315 (17.3)**	**25,739 (70.5)**	**32,054 (87.8)**

The proposed operations would occur within existing airspace and training areas currently utilized by KC-135s that operate from MacDill AFB. A change in airspace would not occur under this alternative.

There would be a corresponding (i.e., 50.0 percent) increase in aircraft maintenance activities following the addition of these KC-135s to MacDill AFB. Aircraft maintenance practices would not change from those currently practiced on the existing fleet of KC-135s at MacDill AFB.

Facility Construction, Demolition, and Renovation. Facility construction, demolition, and renovation would occur to support operations and maintenance of the additional KC-135s and to provide parking, housing, and office space for associated personnel at MacDill AFB. Building construction would occur in the form of new buildings and additions onto existing buildings and would add 121,500 ft^2 of new interior space to MacDill AFB. Building demolition would occur to make space for new construction and would remove 4,000 ft^2 of existing building footprint from the installation. Parking lot construction and demolition would accompany certain building construction projects and would result in a net reduction of 22,500 ft^2 of paved parking area from MacDill AFB. Building renovations would be limited to interior updates, and all renovations would occur within existing facility footprints. Building renovation would modify 157,440 ft^2 of existing interior space. Renovations in the form of pavement repair and upgrades to the fuel hydrant system would occur on the North Ramp and could disturb as much as 1,350,000 ft^2 of existing paved surface.

In total, the MacDill AFB Alternative would disturb a maximum of 1,699,440 ft^2; however, this area could be smaller because some construction and demolition projects overlap with one another and the proposed renovations to Hangar 2 and the North Ramp would likely occur on a small fraction of the total area of these facilities. The MacDill AFB Alternative would increase the total amount of impervious surfaces on MacDill AFB by 104,500 ft^2 and would increase the amount of interior space by 117,500 ft^2. **Figure 2-2** shows the locations of the proposed construction, demolition, and renovation under the MacDill AFB Alternative, and **Table 2-5** provides a summary of these projects.

Figure 2-2. Proposed Construction, Demolition, and Renovation at MacDill AFB

Table 2-5. Proposed Construction, Demolition, and Renovation at MacDill AFB

Location	Timeline	Description	Area of Disturbance	Change in Impervious Surfaces
Hangar 2 (Hangar Bay)	2019	Renovate the interior of Hangar 2 to provide additional space for aircraft maintenance operations and storage.	Renovation: - Hangar 2 (82,715 ft^2)	0 ft^2
Building 55 (Aircraft Maintenance Squadrons)	2021	Renovate the interior of Building 55 to accommodate aircraft maintenance squadrons.	Renovation: - Building 55 (19,475 ft^2)	0 ft^2
Building 56 (Aircraft Maintenance Squadrons)	2021	Renovate the interior of Building 56 to accommodate aircraft maintenance squadrons.	Renovation: - Building 56 (30,000 ft^2)	0 ft^2
Building 303 (Fitness Center)	2020	Construct an addition onto the east face of Building 303 to provide additional indoor fitness/athletic space. The proposed addition would partially coincide with an athletic track and field.	Construction: - Addition to Building 303 (5,000 ft^2)	+5,000 ft^2
Building 378 (Dormitory)	2020	Renovate the interior of Building 378 to satisfy the need for at least 68 new dormitory rooms.	Renovation: - Building 378 (25,250 ft^2)	0 ft^2
Fuel Cell Hangar	2019	Construct an additional full-in aircraft maintenance hangar with fuel cell capabilities. The proposed hangar would be sited on the north side of the North Ramp on a grass field.	Construction: - Hangar (61,000 ft^2)	+61,000 ft^2
North Ramp	2020	Install a looped fuel hydrant system and eight new hydrants on the North Ramp. Perform repairs to hard stands. Reconfigure parking spots to park 23 KC-135s while retaining hydrant spacing and the capability to park aircraft larger than a KC-135 on this ramp.	Renovation: - North Ramp (1,350,000 ft^2)	0 ft^2
Squadron Operations Facility	2020	Construct a new squadron operations facility. The proposed facility would be sited between Hangars 4 and 5 partially on a parking lot. Building 44 overlaps with this siting and would be demolished. The parking lot immediately northwest of Buildings 247 and 293 would be expanded to Hillsborough Loop Drive to compensate for the lost parking lot.	Construction: - New facility (51,000 ft^2) - Parking lot (22,000 ft^2) Demolition: - Building 44 (4,000 ft^2) - Parking lot (40,000 ft^2)	+38,500 ft^2
Warehouse Facility	2020	Construct a new warehouse facility on the flightline for storage of large aircraft parts. The proposed warehouse facility would be sited between Hangars 1 and 2 on a portion of a parking lot.	Construction: - Warehouse (4,500 ft^2) Demolition: - Parking lot (4,500 ft^2)	0 ft^2
Total Area			**1,699,440 ft^2**	**+104,500 ft^2**

2.2.3 Selection Criteria for Construction, Demolition, and Renovation Alternatives

USAF also considered alternative strategies for the facility construction, demolition, and renovation proposed for Fairchild AFB and MacDill AFB. The construction, demolition, and renovation alternatives needed to meet the following selection criteria to be reasonable alternatives:

- Minimize the amount of new construction, disturbance area, and new impervious surfaces.
- Avoid conflicts with existing and future facilities and missions.
- Meet operational efficiency requirements.

2.2.4 Evaluation and Selection of Construction, Demolition, and Renovation Alternatives

The evaluation of construction, demolition, and renovation alternatives for Fairchild AFB and MacDill AFB against the selection criteria did not identify any reasonable alternatives because none of the alternative strategies for facility construction, demolition, and renovation met all of the selection criteria presented in **Section 2.2.3**. **Sections 2.2.4.1** and **2.2.4.2** describe the construction, demolition, and renovation alternatives for Fairchild AFB and MacDill AFB, respectively, and provide an explanation for why these alternatives do not meet the construction, demolition, and renovation selection criteria.

2.2.4.1 FAIRCHILD AFB CONSTRUCTION, DEMOLITION, AND RENOVATION ALTERNATIVE

The Fairchild AFB Construction, Demolition, and Renovation Alternative would entail the construction, demolition, and renovation described under the Proposed Action in **Section 2.1**, with the following exceptions:

- Building 1 would not be demolished, and a new base/squadron operation facility would not be constructed. Instead, Building 1 would undergo a major renovation and continue to serve as the base/squadron operations facility. Temporarily facilities, such as Building 2060, would house mission components that could not fit into the newly renovated Building 1.
- The pavement on the parking ramp at Spots 25 to 28 would not be demolished and replaced. Rather, a combination of new parking space would be constructed and existing pavement at other locations on the parking ramp would be demolished and replaced to provide four additional parking spots with fuel hydrants.

Neither alternative strategy for facility construction, demolition, and renovation meets all of the selection criteria. While renovating Building 1 would minimize the amount of new construction, disturbance area, and new impervious surfaces as compared to constructing a new base/ squadron operations facility, these renovations would not provide an integrated workspace for all mission components because temporary facilities would be used to make up for the shortfall of available space within Building 1. The lack of an integrated workspace would reduce operational efficiencies and conflict with future missions because Building 2060 is planned to be repurposed for a separate function in FY 2021. Building 1 is also in poor condition, and a major

renovation would not address all structural and safety deficiencies. Spots 25 to 28 were determined to be the most reasonable locations for the four additional parking spots. Any combination of new parking space construction or replacement of existing pavement at other locations on the parking ramp would disturb an area larger than that for Spots 25 to 28 and likely increase the amount of impervious surfaces on the installation. Additionally, the extension of a fuel line from Building 2028 to the alternative parking spots would disturb a greater distance than that between Building 2028 and Spot 28. For these reasons, the Fairchild AFB Construction, Demolition, and Renovation Alternative does not meet the selection criteria and was eliminated from further analysis.

2.2.4.2 MACDILL AFB CONSTRUCTION, DEMOLITION, AND RENOVATION ALTERNATIVE

The MacDill AFB Construction, Demolition, and Renovation Alternative would entail the construction, demolition, and renovation described under the MacDill AFB Alternative in **Section 2.2.2.1**, with the following exceptions:

- The proposed fuel cell hangar would not be constructed on the north side of the North Ramp. The hangar would instead be constructed at the northeast end of the North Ramp, adjacent to Building 563 and coinciding with a wash rack. The existing wash rack would be demolished, and a new wash rack would be constructed on the north side of the North Ramp south of Buildings 1065 and 1071.
- The proposed reconfiguration of parking spots on the North Ramp would occur; however, the reconfiguration would not retain the existing hydrant spacing or the capability to park aircraft larger than a KC-135 on this ramp.
- The proposed warehouse facility would not be constructed. Instead, renovations to Buildings 49 and 1081 would occur to create storage space for large aircraft parts.

None of the three alternative strategies for facility construction, demolition, and renovation meets all of the selection criteria. Constructing the proposed fuel cell hangar at the northeast end of the North Ramp would create additional new construction, disturbance area, and impervious surfaces as compared to the MacDill AFB Alternative and would conflict with an existing facility. Additional new construction and disturbance area would be created from relocating 12 to 15 existing hydrants on the North Ramp, and operational efficiencies would be reduced because aircraft larger than a KC-135 would no longer be able to park on the North Ramp. Lastly, while renovations to Buildings 49 and 1081 would minimize the amount of new construction and disturbance area as compared to constructing a new warehouse facility, these renovations would not meet operational efficiency requirements because large aircraft parts would be stored in two facilities, neither of which is directly on the flightline. Building 49 also requires a major renovation to address safety concerns at the loading docks. For these reasons, the MacDill AFB Construction, Demolition, and Renovation Alternative does not meet the selection criteria and was eliminated from further analysis.

2.3 No Action Alternative

The Environmental Impact Analysis Process (32 CFR 989.8[d]) requires consideration of the No Action Alternative, which provides a baseline against which the Proposed Action and action alternatives can be compared. In addition, CEQ NEPA guidance recommends inclusion of the

No Action Alternative in an EA to assess any environmental consequences that may occur if the Proposed Action is not implemented. Therefore, the No Action Alternative is carried forward for detailed analysis in this EA although it does not meet all of the selection criteria listed in **Sections 2.2.1** and **2.2.3** or the purpose of and need for the Proposed Action, as described in **Section 1.4**.

USAF would not add 12 KC-135s and activate a new air refueling squadron at Fairchild AFB or MacDill AFB. No additional aircraft, personnel and dependents, or operations and maintenance activities would be added to either installation. No facility construction, demolition, or renovation would occur. The No Action Alternative would not allow USAF to comply with the force adjustments enacted through the FY 2017 National Defense Authorization Act to redistribute 12 KC-135s within the continental United States in FY 2020. Consequently, USAF and AMC would not be able to continue to provide fully capable air refueling assets to accomplish air refueling and related missions, and AMC continental U.S. active duty locations would be unable to meet their mission to provide rapid global mobility and sustainment.

2.4 Identification of the Preferred Alternative

The Preferred Alternative is the alternative that USAF believes best satisfies the purpose and need and would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors. USAF has identified the Proposed Action, as described in **Section 2.1** and which meets all of the selection criteria, as the Preferred Alternative.

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3. Affected Environment and Environmental Consequences

This section presents a description of the environmental resources and baseline conditions that could be affected by the Proposed Action and its alternatives. This section also presents an analysis of the potential environmental consequences of the Proposed Action, MacDill AFB Alternative, and No Action Alternative. The Proposed Action and alternatives were evaluated for their potential environmental consequences on the environmental resources in accordance with CEQ NEPA regulations at 40 CFR 1508.8.

All environmental resources were initially considered in this EA. In compliance with NEPA, CEQ, and USAF Environmental Impact Analysis Process regulations and guidelines, the following discussion of the affected environment and environmental consequences focuses only on those environmental resources considered potentially subject to impacts or with potentially significant environmental issues. The environmental resources analyzed in detail for the Proposed Action and MacDill AFB Alternative are air quality, terrestrial biological resources, cultural resources, geological resources, hazardous materials and wastes, infrastructure and transportation, noise, land use, safety, socioeconomics, and water resources. The environmental resources not analyzed in detail in this EA because clearly insignificant or no impacts would occur are airspace and marine biological resources. Environmental justice and sensitive receptors is analyzed in detail for the MacDill AFB Alternative but not for the Proposed Action at Fairchild AFB. The following paragraphs explain why airspace, marine biological resources, and environmental justice and sensitive receptors for Fairchild AFB were dismissed from detailed analysis in this EA.

Airspace. The Proposed Action and its alternatives would not include any changes to existing airspace. All KC-135s would continue to conduct operations within existing airspace and training areas currently utilized by KC-135s that operate from Fairchild AFB and MacDill AFB. Therefore, no impacts on airspace would occur. The additional aircraft operations would slightly increase noise when compared to existing conditions, which is discussed in **Section 3.7**.

Marine Biological Resources. Fairchild AFB is more than 200 miles from the nearest marine environment; therefore, no direct or indirect impacts on marine biological resources would occur from the Proposed Action. While MacDill AFB is immediately surrounded by marine environment on three sides, no construction would occur in the marine waters surrounding the installation. Even with a slight increase in noise from additional aircraft operations, sound from aircraft is refracted and scattered at the water surface, and marine species do not experience the same level of sound as terrestrial species (NPS 1994). As such, no direct or indirect impacts on marine biological resources would occur from the MacDill AFB Alternative. **Section 3.2** addresses potential impacts on nesting sea turtles and terrestrial biological resources.

Environmental Justice and Sensitive Receptors for the Proposed Action at Fairchild AFB. The Proposed Action at Fairchild AFB would not result in disproportionately high and adverse health or environmental impacts on environmental justice (i.e., minority and low-income)

populations or disproportionate impacts on sensitive receptor (i.e., children and elderly) populations. Facility construction, demolition, and renovation would occur within discrete areas of Fairchild AFB in land uses that are functionally related to the airfield where access is restricted to military and DoD civilian personnel, except for the addition/renovation to Building 2379 (Fitness Center). As such, there would be no adverse impacts on off-installation populations and little to no impact on on-installation populations during construction, demolition, and renovation. Standard construction safety best management practices (BMPs) (e.g., fencing and other security measures) would reduce potential risks to on-installation populations to minimal levels. Therefore, construction associated with the Proposed Action would not result in disproportionate impacts on any populations, including minority and low-income populations, or increased exposure of children and elderly persons to environmental health risks or safety risks.

The Proposed Action would result in an average of 13.6 additional KC-135 aircraft operations per day. Noise resulting from the increase of KC-135 operations would not have the potential to cause adverse effects on any populations because when compared to existing conditions it would have no perceptible effect on the overall noise in areas surrounding the installation. Additionally, based on review of aerial photography, there are no structures or other areas where environmental justice and sensitive receptor populations would congregate within the proposed 65-A-weighted decibels (dBA) Day-night Sound Level (DNL) noise contour outside of the installation. The on-installation land under the proposed 65 dBA DNL noise contour consists only of land uses that are functionally related to the airfield (e.g., airfield, aircraft operations and maintenance, industrial, and open space [conservation area or buffer space]), and there are no land uses or areas where environmental justice and sensitive receptor populations might congregate.

Therefore, there would be no significant or disproportionately high and adverse health or environmental impacts on minority or low-income populations, and no significant or disproportionate impacts on child or elderly populations on or near Fairchild AFB during facility construction, demolition, and renovation or during aircraft operation. Environmental justice and sensitive receptors for the MacDill Alternative has been carried forward for detailed analysis in the EA because noise from the increase of KC-135 aircraft would potentially affect environmental justice and sensitive receptor populations.

3.1 Air Quality

3.1.1 Definition of the Resource

Air quality in a given location is defined by the concentration of various pollutants in the atmosphere. A region's air quality is influenced by many factors including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions.

3.1.2 Affected Environment

3.1.2.1 FAIRCHILD AFB

The U.S. Environmental Protection Agency (USEPA) Region 10 and Washington State Department of Ecology regulate air quality in the State of Washington, and the Spokane Regional Clean Air Agency (SRCAA) regulates air quality in the greater Spokane region

including at Fairchild AFB. The Clean Air Act (42 USC §§ 7401–7671q), as amended, assigns USEPA the responsibility to establish primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR § 50) that specify acceptable concentration levels of six criteria pollutants: particulate matter (measured as both particulate matter less than 10 microns in diameter [PM_{10}] and particulate matter less than 2.5 microns in diameter [$PM_{2.5}$]), sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and lead. Short-term NAAQS (1-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health effects, while long-term NAAQS (annual averages) have been established for pollutants contributing to chronic health effects. While each state has the authority to adopt standards stricter than those established under the federal program, the State of Washington has accepted the federal standards.

Federal regulations designate areas in violation of the NAAQS as nonattainment and areas with levels below the NAAQS as attainment. Maintenance is designated to areas that have previously been designated as nonattainment and have been redesignated to attainment for a probationary period through implementation of maintenance plans.

USEPA has designated all of Spokane County as attainment for all criteria pollutants, and parts of the county as maintenance areas for CO and PM_{10}. Fairchild AFB is not within these maintenance areas (USEPA 2018a, SRCAA 2015, SRCAA 2016). Because the Proposed Action is within an area that is in full attainment for the NAAQS, general conformity rules do not apply. USEPA monitors levels of criteria pollutants at representative sites throughout the United States. For reference purposes, **Table 3-1** shows the highest reported concentrations by all monitoring stations within Spokane County during the last three years.

Regulatory Overview. Fairchild AFB operates under a synthetic minor air-operating permit. The permit requirements include annual periodic inventory of all significant stationary sources of air emissions for each of the criteria pollutants of concern and monitoring and recordkeeping requirements. Primary stationary sources of air emissions include paint booths, fuel storage areas, and diesel-fueled electricity generators (Fairchild AFB 2012a). **Table 3-2** lists Fairchild AFB's installation-wide air emissions from all significant stationary sources. Washington does not require permitting of mobile source emissions (e.g., aircraft and vehicle operations).

Climate and Greenhouse Gases. Fairchild AFB's average high temperature is 82 degrees Fahrenheit (°F) in the hottest month of August and average low temperature is 22°F in the coldest month of December. Fairchild AFB has average annual precipitation of 17 inches per year. The wettest month of the year is December with an average rainfall of 2.3 inches (Idcide 2018).

Table 3-1. Air Quality Standards and Monitored Data Closest to Fairchild AFB

Pollutant	Air Quality Standard		Monitored Concentrations Fairchild AFB		
	Level	Averaging Period	2014	2015	2016
CO					
1-hour (ppm)	35	Not to be exceeded more than once per year	3.1	4.1	*No Data*
8-hour (ppm)	9		1.8	2.9	1.8
NO_2					
1-hour (ppb)	100	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years	*No Data*	*No Data*	*No Data*
O_3					
8-hour (ppm)	0.070	3-year average of the fourth highest daily maximum	0.060	0.066	0.056
SO_2					
1-hour (ppm)	75	98th percentile, averaged over 3 years	*No Data*	*No Data*	*No Data*
3-hour (ppb)	0.5	Not to be exceeded more than once per year	*No Data*	*No Data*	*No Data*
$PM_{2.5}$					
24-hour (µg/m^3)	35	98th percentile, averaged over 3 years	19	*No Data*	*No Data*
Annual mean (µg/m^3)	12	Averaged over 3 years	7.1	*No Data*	*No Data*
PM_{10}					
24-hour (µg/m^3)	150	Not to be exceeded more than once per year over 3 years	79	*No Data*	70
Lead					
Rolling 3 month average (µg/m^3)	0.15	Not to be exceeded	*No Data*	*No Data*	*No Data*

Sources: 40 CFR 50.1–50.12, USEPA 2018b

Key: ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter

Table 3-2. 2017 Emissions for Significant Stationary Sources at Fairchild AFB

Pollutant	Emissions (tons per year [tpy])
CO	0.9
Nitrogen oxides (NO_x)	5.2
Volatile organic compounds (VOCs)	6.4
PM_{10}/$PM_{2.5}$	0.6

Source: Fairchild AFB 2017

3.1.2.2 MACDILL AFB

USEPA Region 4 and Florida Department of Environmental Protection (FDEP) regulate air quality in Florida. Florida has accepted the federal NAAQS. USEPA has designated all of Hillsborough County as attainment for all criteria pollutants, and parts of the county as a maintenance area for SO_2. MacDill AFB is not within the SO_2 maintenance area (USEPA 2018a, FDEP 2015). Because the MacDill AFB Alternative is within an area that is in full attainment for the NAAQS, general conformity rules do not apply. USEPA monitors levels of criteria pollutants at representative sites throughout the United States. For reference purposes, **Table 3-3** shows the highest reported concentrations by all monitoring stations within Hillsborough County during the last three years.

Table 3-3. Air Quality Standards and Monitored Data Closest to MacDill AFB

Pollutant	Air Quality Standard		Monitored Concentrations MacDill AFB		
	Level	Averaging Period	2014	2015	2016
CO					
1-hour (ppm)	35	Not to be exceeded more than once per year	0.5	0.4	1.4
8-hour (ppm)	9		1.0	0.7	0.8
NO_2					
1-hour (ppb)	100	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years	30	47	*No Data*
O_3					
8-hour (ppm)	0.070	3-year average of the fourth highest daily maximum	0.071	0.068	0.070
SO_2					
1-hour (ppm)	75	98th percentile, averaged over 3 years	60	69	69
3-hour (ppb)	0.5	Not to be exceeded more than once per year	*No Data*	*No Data*	*No Data*
$PM_{2.5}$					
24-hour ($\mu g/m^3$)	35	98th percentile, averaged over 3 years	*No Data*	30	17
Annual mean ($\mu g/m^3$)	12	Averaged over 3 years	*No Data*	9.8	7.7
PM_{10}					
24-hour ($\mu g/m^3$)	150	Not to be exceeded more than once per year over 3 years	71	50	42
Lead					
Rolling 3 month average ($\mu g/m^3$)	0.15	Not to be exceeded	0.13	0.15	0.09

Sources: 40 CFR 50.1–50.12, USEPA 2018b
Key: ppm = parts per million; ppb = parts per billion; $\mu g/m^3$ = micrograms per cubic meter

Regulatory Overview. MacDill AFB is considered a synthetic minor source for the purposes of air permitting. The installation limits its actual annual emissions to levels beneath the major source thresholds by including federally enforceable limitations in its synthetic minor air-operating permit. These limitations are implemented via specific practices according to fuel type and process. The installation's permit (#0570141-020-AO) expires June 25, 2018 (MacDill AFB 2017b). Other permit requirements include a periodic inventory of all significant stationary sources of air emissions as well as monitoring and recordkeeping requirements. Primary sources of air emissions are boilers and back-up generators as well as multiple exempt sources such as natural gas-fired external combustion heating units, fuel storage tanks, parts washers, woodworking activities, painting and enclosed blasting operations, etc. (MacDill AFB 2017b). **Table 3-4** lists MacDill AFB's facility-wide air emissions from all significant stationary sources. Florida does not require permitting of mobile source emissions (e.g., aircraft and vehicle operations).

Table 3-4. 2016 Emissions for Significant Stationary Sources at MacDill AFB

Pollutant	Emissions (tpy)
CO	1.8
NO_x	7.1
VOCs	20.7
$PM_{10}/PM_{2.5}$	0.7
SO_2	0.2

Source: MacDill AFB 2016

Climate and Greenhouse Gases. MacDill AFB's average high temperature is 90°F in the hottest month of July and average low temperature is 54°F in the coldest month of January. MacDill AFB has average annual precipitation of 50 inches per year. The wettest month of the year is August with an average rainfall of 8.3 inches (Idcide 2018).

3.1.3 Environmental Consequences

Impacts on air quality would be significant if an action would interfere with the state's ability to maintain the NAAQS, or it would contribute to a violation of any federal, state, or local air regulation.

3.1.3.1 PROPOSED ACTION

The Proposed Action would have short-term, minor and long-term, moderate adverse impacts on air quality. Short-term impacts would be from fugitive dust and equipment exhaust generated by heavy equipment during construction and demolition. Long-term impacts would be from increases in aircraft operations, ground support equipment, aircraft maintenance, new personnel, and heating of proposed buildings (i.e., operational activities).

Because the Proposed Action is within an area that is in full attainment for the NAAQS, the general conformity rules do not apply. Although the general conformity rules do not apply, the general conformity *de minimis* thresholds were used as significance indicators to determine the level of impacts under NEPA and if additional analysis would be required.

The USAF Air Conformity Applicability Model (ACAM) was used to estimate air emissions from the Proposed Action (see **Appendix B**). **Table 3-5** lists total direct and indirect annual emissions resulting from the Proposed Action. These emission estimates include those from construction and demolition and operational activities such as aircraft operations, ground support equipment, aircraft maintenance, new personnel, and heating of proposed buildings. All construction and demolition activities have been analyzed as occurring during a single calendar year. Operational emissions would be produced during all calendar years following the construction and demolition year. Construction and demolition and operational emissions from the Proposed Action would be below the *de minimis* thresholds for all criteria pollutants except NO_x; therefore, impacts from these pollutants would be minor. NO_x emissions from operation activities were carried forward for additional review to determine if it may interfere with the state's ability to maintain the NAAQS in this region.

Table 3-5. Annual Emissions Compared to *De Minimis* Thresholds - Proposed Action

Activity/Source	CO	NO_x	VOC	SO_x	PM_{10}	$PM_{2.5}$	*De Minimis* Threshold [tpy]	Exceeds *De Minimis* Thresholds? [Yes/No]
Construction & Demolition Year	8.8	12.2	16.5	<0.1	39.5	0.6	100	No
Operations Years	88.0	136.5	7.3	9.6	1.3	1.2	100	Yes, NO_x only.

Source: USAF 2017a

Estimated NO_x emissions from the operational component of the Proposed Action were compared to the most recent Spokane County emissions inventory (2014) to determine their potential to contribute to an exceedance of the NO_2 NAAQS. The total NO_x emissions in Spokane County was 14,063 tons in 2014, and the NO_x emissions from the operational component of the Proposed Action would be 1.0 percent of those county-wide emissions (136.5/14,063 × 100 = 1.0 percent) (USEPA 2014a). Spokane County has been designated as unclassifiable/attainment for NO_2, and the concentrations of NO_2 are expected to be so much less than the NAAQS that they are not even monitored in the area. Therefore, these NO_x emissions would not interfere with the state's ability to maintain the NO_2 NAAQS in this region.

NO_x (and VOC) emissions are precursors to the formation of O_3. The fourth-highest maximum O_3 levels in the Spokane region are slightly below the 8-hour O_3 NAAQS of 0.07 parts per million (ppm). For example, the Cheney air monitoring station, located approximately 15 miles southeast of Fairchild AFB, recorded the fourth-highest O_3 concentrations in 2016, 2015, and 2014 at 0.053, 0.066, and 0.060 ppm, respectively (USEPA 2018b). Assuming the 1.0 percent increase from the operational component of the Proposed Action is applied to the 2016-monitored value, the concentration would increase from 0.053 to 0.054 ppm and continue to be below the 0.07 ppm standard. Therefore, it is not expected that NO_x emissions would interfere with the state's ability to maintain the 8-hour O_3 NAAQS in this region.

In summary, air emissions from the Proposed Action would occur within an attainment area. The operational component of the Proposed Action would introduce NO_x emissions greater than the general conformity *de minimis* levels and equal to approximately 1.0 percent of the total emissions of Spokane County. However, these emissions would not interfere with the state's

ability to maintain the NAAQS or lead to a violation of any federal, state, or local air quality regulation.

Regulatory Review. No new stationary sources of air emissions are part of the Proposed Action at this time; therefore, no air permitting requirements are necessary. Some minor new stationary source emissions, such as emergency generators and boilers and heaters, might become necessary in the future. Any new stationary sources of air emissions would fully comply with SRCAA permitting requirements. In addition, SRCAA Regulation I outlines other non-permitting requirements, such as controlling fugitive dust and open burning. All persons responsible for any operation, process, handling, transportation, or storage facility that could result in fugitive dust would take reasonable precautions to prevent such dust from becoming airborne. Reasonable precautions might include using water to control dust from road grading or land clearing. The Proposed Action would proceed in full compliance with current SRCAA Regulation I requirements with compliant practices and products. Examples of such requirements include the following:

- Outdoor burning (SRCAA Regulation I, Article VI, 6.01)
- Particulate matter; preventing particulate matter from becoming airborne (SRCAA Regulation I, Article VI, 6.05)
- Standards for controlling particulate matter on paved surfaces (SRCAA Regulation I, Article VI, 6.14)
- Standards for controlling particulate matter on unpaved surfaces (SRCAA Regulation I, Article VI, 6.15).

Greenhouse Gases and Climate Change. This EA examines greenhouse gases (GHGs) as a category of air emissions. Issues of temperature and precipitation trends are evaluated to determine if the Proposed Action and alternatives would be affected by climate change. This EA does not attempt to measure the actual incremental impacts of GHG emissions from the Proposed Action and alternatives because there is a lack of consensus on how to measure such impacts.

Changes in GHG emissions from the Proposed Action would primarily come from the fuel used during KC-135 operations. The Proposed Action would result in a minute increase in annual carbon dioxide equivalent (CO_2e) emissions as compared to current global, nationwide, and statewide emissions (see **Table 3-6**). The impacts of such a small increase in GHG emissions would be negligible. The Proposed Action would also have 44 percent fewer GHG emissions than the MacDill AFB Alternative.

Washington is in the northwestern climate region of the United States and is beginning to experience changes in the timing of streamflow, changing snowmelt, and reduced supply of water. The sensitivity of agriculture in the northwest to climate change stems from its dependence on irrigation water; a specific range of temperatures, precipitation, and growing seasons; and the sensitivity of crops to temperature extremes. Average annual temperatures during the last century across the northwest increased by almost 1.3°F, and precipitation generally increased (NCA 2014a).

Table 3-6. Annual GHG Emissions - Proposed Action

Scale	CO_2e Emissions (MMT)	Percent Increase from Proposed Action
Global	43,125	0.00006
United States	6,870	0.0004
Washington	76.0	0.04
Proposed Action	0.028	-

Sources: USEIA 2018, USAF 2017a
Key: MMT = million metric tons.

Table 3-7 outlines potential climate stressors and their impacts on the Proposed Action. The operational activities at Fairchild AFB in and of themselves are only indirectly dependent on any of the elements associated with future climate scenarios (e.g., meteorological changes). At this time, no future climate scenario or potential climate stressor would have appreciable impacts on any element of the Proposed Action.

Table 3-7. Impacts of Potential Climate Stressors on the Proposed Action

Potential Climate Stressor	Impacts on the Proposed Action
Changing stream flow and snow melt	Negligible
Longer fire seasons and more severe wildfires	Negligible
Changes in precipitation patterns	Negligible
Increase in temperature	Negligible
Harm to water resources, agriculture, wildlife, ecosystems	Negligible

Source: NCA 2014a

3.1.3.2 MACDILL AFB ALTERNATIVE

The MacDill AFB Alternative would have short-term, minor and long-term, moderate adverse impacts on air quality. Short-term impacts would be from fugitive dust and equipment exhaust generated by heavy equipment during construction and demolition. Long-term impacts would be from increases in aircraft operations, ground support equipment, aircraft maintenance, new personnel, and heating of proposed buildings (i.e., operational activities).

Because the MacDill AFB Alternative is within an area that is in full attainment for the NAAQS, the general conformity rules do not apply. Although the general conformity rules do not apply, the general conformity *de minimis* thresholds were used as significance indicators to determine the level of impacts under NEPA and if additional analysis would be required.

The ACAM was used to estimate air emissions from the MacDill AFB Alternative (see **Appendix B**). **Table 3-8** lists total direct and indirect annual emissions resulting from the MacDill AFB Alternative. All construction and demolition activities have been analyzed as occurring during a single calendar year. Operational emissions would be produced during all calendar years following the construction and demolition year. Construction and demolition emissions from the MacDill AFB Alternative would be below the *de minimis* thresholds for all criteria pollutants. Operational emissions from the MacDill AFB Alternative would be below the *de minimis* thresholds for all criteria pollutants except CO and NO_x. Therefore, impacts from emissions of all criteria pollutants except CO and NO_x would be minor. CO and NO_x emissions from operational activities were carried forward for additional review to determine if they may interfere with the state's ability to maintain the NAAQS in this region.

Table 3-8. Annual Emissions Compared to *De Minimis* Thresholds - MacDill AFB Alternative

Activity/Source	CO	NO_x	VOC	SO_x	PM_{10}	$PM_{2.5}$	*De Minimis* Threshold [tpy]	Exceeds *De Minimis* Thresholds? [Yes/No]
Construction & Demolition Year	7.9	10.9	39.3	<0.1	57.6	0.5	100	No
Operations Years	164.5	255.7	13.8	17.9	2.5	2.4	100	Yes, CO and NO_x only.

Source: USAF 2017a

Estimated CO emissions from the operational component of the MacDill AFB Alternative were compared to the most recent Hillsborough County emissions inventory (2014) to determine their potential to contribute to an exceedance of the NAAQS. The total CO emissions in Hillsborough County was 193,332 tons in 2014, and the CO emissions from the operational component of the MacDill AFB Alternative would be 0.1 percent of those county-wide emissions (164.5/193,332 × 100 = 0.1 percent) (USEPA 2014a). Exceedances of the CO NAAQS are normally localized and near the emission source. Most CO emissions from the MacDill AFB Alternative would be from aircraft operations, not at ground level, and readily dispersed. Given that the county is in attainment for the CO NAAQS by a wide margin as indicated in **Table 3-3** and the CO emissions would be readily dispersed, the MacDill AFB Alternative would not interfere with the state's ability to maintain the CO NAAQS in this region.

Estimated NO_x emissions from the operational component of the MacDill AFB Alternative were compared to the most recent Hillsborough County emissions inventory (Calendar Year 2014) to determine their potential to contribute to an exceedance of the NO_2 NAAQS. The total NO_x emissions in Hillsborough County was 31,474 tons in 2014, and the NO_x emissions from the operational component of the MacDill AFB Alternative would be 0.8 percent of those county-wide emissions (255.7/31,474 × 100 = 0.8 percent) (USEPA 2014a). Given that the county is in attainment for the NO_2 NAAQS by a wide margin as indicated in **Table 3-3**, NO_x emissions would not interfere with the state's ability to maintain the NO_2 NAAQS in this region.

NO_x (and VOC) emissions are precursors to the formation of O_3. The fourth-highest maximum O_3 levels in the Hillsborough County region are slightly below the 8-hour O_3 NAAQS of 0.07 ppm. For example, the Grandy Boulevard, Tampa air monitoring station, located approximately four miles northwest of MacDill AFB, recorded the fourth-highest O_3 concentrations in 2016, 2015, and 2014 at 0.067, 0.066, and 0.066 ppm, respectively (USEPA 2018b). Assuming the 0.8 percent increase from the operational component of the MacDill AFB Alternative is applied to the 2016-monitored value, the concentration would increase from 0.067 to 0.068 ppm and continue to be below the 0.070 ppm standard. Therefore, it is not expected that NO_x emissions would interfere with the state's ability to maintain the 8-hour O_3 NAAQS in this region.

In summary, air emissions from the MacDill AFB Alternative would occur within an attainment area. The operational component of the MacDill AFB Alternative would introduce CO and NO_x emissions greater than the general conformity *de minimis* levels and equal to approximately 0.1 and 0.8 percent of the total respective emissions of Hillsborough County. However, these

emissions would not interfere with the state's ability to maintain the NAAQS or lead to a violation of any federal, state, or local air quality regulation.

Regulatory Review. No new stationary sources of air emissions are part of the MacDill AFB Alternative at this time; therefore, no air permitting requirements are necessary. Some minor new stationary source emissions, such as back-up generators and boilers and heaters, might become necessary in the future. Any new stationary sources of air emissions would fully comply with FDEP permitting requirements. In addition, the Florida Administrative Code (FAC) outlines other non-permitting requirements, such as controlling fugitive dust and open burning. All persons responsible for any operation, process, handling, transportation, or storage facility that could result in fugitive dust would take reasonable precautions to prevent such dust from becoming airborne. Reasonable precautions might include using water to control dust from building construction, road grading, or land clearing. The MacDill AFB Alternative would proceed in full compliance with current FAC requirements, with compliant practices and products. These requirements include the following:

- Air Pollution Control – General Provisions (62-204 FAC)
- Particulate Matter Emissions (62-296 FAC)
- Open Burning (62-256 FAC)
- Gasoline Vapor Control (62-252 FAC).

Greenhouse Gases and Climate Change. Changes in GHG emissions from the MacDill AFB Alternative would primarily come from the fuel used during KC-135 operations. The MacDill AFB Alternative would result in a minute increase in annual CO_2e emissions as compared to current global, nationwide, and statewide GHG emissions (see **Table 3-9**). The impacts of such a small increase in GHG emissions would be negligible. The MacDill AFB Alternative would also have 44 percent greater GHG emissions than the Proposed Action.

Table 3-9. Annual GHG Emissions - MacDill AFB Alternative

Scale	CO_2e Emissions (MMT)	Percent Increase from the MacDill AFB Alternative
Global	43,125	0.0001
United States	6,870	0.0007
Florida	231.4	0.02
MacDill AFB Alternative	0.050	-

Sources: USEIA 2018, USAF 2017a
Key: MMT = million metric tons.

Florida is in the southeastern climate region of the United States, where climate change leaves this area exceptionally vulnerable to sea level rise, extreme heat events, hurricanes, and decreased water availability. The geographic distribution of these impacts and vulnerabilities is uneven because the region encompasses a wide range of natural system types from the Appalachian Mountains to the coastal plains. Temperatures increased from 1970 to the present by an average of 2°F with higher average temperatures during summer months. The number of category 4 and 5 hurricanes in the Atlantic basin has increased substantially since the early 1980s compared to the historical record that dates back to the mid-1880s. Sea level rise is projected to increase resulting in major damage as wind-driven waves ride upon higher seas

and reach farther inland. Flooding and erosion in coastal areas will increase with sea level rise and will damage some coastal areas during storms and extreme high tides (NCA 2014b).

Table 3-10 outlines potential climate stressors and their impacts on the MacDill AFB Alternative. The operational activities at MacDill AFB in and of themselves are only indirectly dependent on any of the elements associated with future climate scenarios (e.g., meteorological changes). At this time, no future climate scenario or potential climate stressor would have appreciable impacts on any element of the MacDill AFB Alternative with exception to KC-135 operations possibly being temporarily relocated to other installations during and immediately following flooding and hurricanes events at MacDill AFB.

Table 3-10. Impacts of Potential Climate Stressors on the MacDill AFB Alternative

Potential Climate Stressor	Impacts on the MacDill AFB Alternative
More frequent and intense heat waves	Negligible
Sea-level rise	Minor
Changes in precipitation patterns	Negligible
Increase in hurricanes	Minor
Harm to water resources, agriculture, wildlife, ecosystems	Negligible

Source: NCA 2014b

3.1.3.3 NO ACTION ALTERNATIVE

The No Action Alternative would result in no impacts on air quality because neither the Proposed Action nor the MacDill AFB Alternative would be implemented. No facility construction, demolition, or renovation would be undertaken, and there would be no changes in aircraft operations. Air quality conditions would remain unchanged when compared to existing conditions at both installations and as described in **Sections 3.1.2.1** and **3.1.2.2**.

3.2 Biological Resources (Terrestrial)

3.2.1 Definition of the Resource

Biological resources include native or naturalized plants and animals and the habitats (e.g., grasslands, forests, wetlands) in which they exist. Protected and sensitive biological resources include Endangered Species Act (ESA)-listed species (threatened or endangered) and those proposed for ESA-listing as designated by the U.S. Fish and Wildlife Service (USFWS) (terrestrial and freshwater organisms) and migratory birds. Migratory birds are protected species under the Migratory Bird Treaty Act (MBTA). Sensitive habitats include those areas designated or proposed by USFWS or NMFS as critical habitat protected by the ESA and as sensitive ecological areas designated by state or other federal rulings. Sensitive habitats also include wetlands, plant communities that are unusual or limited in distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, crucial summer and winter habitats).

The ESA (16 USC § 1531 et seq.) establishes a federal program to protect and recover imperiled species and the ecosystems upon which they depend. The ESA requires federal

agencies, in consultation with USFWS, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. Under the ESA, "jeopardy" occurs when an action is reasonably expected, directly or indirectly, to diminish numbers, reproduction, or distribution of a species so that the likelihood of survival and recovery in the wild is appreciably reduced. An "endangered species" is defined by the ESA as any species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined by the ESA as any species likely to become an endangered species in the foreseeable future. The ESA also prohibits any action that causes a "take" of any listed animal. "Take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." Listed plants are not protected from take, although it is illegal to collect or maliciously harm them on federal land.

Critical habitat is designated if USFWS or NMFS determines that the habitat is essential to the conservation of a threatened or endangered species. Federal agencies must ensure that their activities do not adversely modify designated critical habitat to the point that it will no longer aid in the species' recovery.

In Washington state, special-status species are listed by the Washington Fish and Wildlife Commission under the provisions of Washington Administrative Code (WAC) Rule 232-12-297 (Endangered, Threatened, and Sensitive Wildlife Species Classification). The Washington Natural Heritage Program tracks rare vascular plant species in the state.

In Florida, the Florida Fish and Wildlife Conservation Commission oversees the protection and management of state-protected fauna under the Florida Endangered and Threatened Species Act (Florida Statute 372.072). Within the FAC, protection is provided to endangered species (68A-27.003 FAC), threatened species (68A-27.004 FAC), and species of special concern (68A-27.005 FAC). The Florida Department of Agriculture and Consumer Services maintains the state list of plants designated as endangered, threatened, and commercially exploited (5B-40 FAC) as defined under Florida Statute 581.185(2).

The MBTA of 1918 (16 USC 703–712), as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, require federal agencies to minimize or avoid impacts on migratory birds. Unless otherwise permitted by regulations, the MBTA makes it unlawful to (or attempt to) pursue, hunt, take, capture, or kill any migratory bird, nest, or egg. Federal agencies with activities that that could have measurable negative impacts on migratory birds are directed by EO 13186 to develop and implement a Memorandum of Understanding with USFWS to promote the conservation of migratory bird populations.

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (BGEPA), which prohibits the "take" of bald or golden eagles in the United States without a 50 CFR § 22.26 permit. BGEPA defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb." For purposes of these guidelines, "disturb" means "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause: (1) injury to an eagle; (2) a decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." In addition to immediate impacts, this definition also

covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment.

3.2.2 Affected Environment

3.2.2.1 FAIRCHILD AFB

Vegetation. Fairchild AFB covers approximately 5,800 acres, and approximately 2,800 acres are improved and semi-improved areas primarily found in the northern portion of the installation. Approximately 1,400 acres in the northeast corner and southern portion of the installation are generally unimproved areas and are covered with open non-native grass fields, wetlands, Russian olive (*Elaeagnus angustifolia*) thicket, scattered ponderosa pine (*Pinus ponderosa*) stands, native grassland with some invasive plants, and shrub fields. Much of the unimproved portions are dominated by pasture grasses and weeds, although some aggressive native species might be present. Most of the vegetation along the Fairchild AFB airfield falls in this category. Vegetation near the runway is managed to minimize avian use in accordance with the Bird/Wildlife Aircraft Strike Hazard (BASH) Reduction Plan (Fairchild AFB 2012b).

The areas of the Proposed Action (i.e., areas proposed for facility construction, demolition, and renovation under the Proposed Action) occur within semi-improved, improved, BASH/airfield, and vegetative bed land cover types. This vegetation is regularly maintained and landscaped, and the grounds are not considered natural vegetation areas. Vegetation within the airfield is maintained and mowed in accordance with the BASH plan to minimize bird/aircraft strikes.

Wildlife. In general, most unimproved wildlife habitat at Fairchild AFB occurs in the southern portion of the installation in the area that contains a mixture of disturbed and semi-native wetlands. This area provides habitat suitable for wildlife such as hawks, owls, deer, songbirds, waterfowl, and upland birds. The areas of the Proposed Action do not occur within unimproved habitat.

In semi-improved or improved areas, where the Proposed Action would occur, common bird species include American robin (*Turdus migratorius*), cedar waxwing (*Bombycilla cedrorum*), and purple finch (*Haemorhous purpureus*). Seasonal water in drainage ditches and open fields near the airfield provide limited habitat value to wildlife. Airfield grassland areas provide suitable habitat for herptiles including salamanders (*Ambystoma* spp.), frogs (*Rana* spp.), and snakes (*Thamnophis* spp. and *Crotalus* spp.) However, vegetation in this area is managed to minimize avian use in accordance with the BASH Reduction Plan (Fairchild AFB 2012b).

Protected and Sensitive Species. There are four federally listed and ten state-listed species that are known to occur or could potentially occur on Fairchild AFB. The list of special status species was developed based on data provided in the 2012 Fairchild AFB Installation Natural Resources Management Plan and information obtained from the Washington Department of Fish and Wildlife, Washington Natural Heritage Program, and the USFWS Information for Planning and Consultation report generated for the installation (Fairchild AFB 2012b, WDFW 2017, WNHP 2017, USFWS 2018a). **Table 3-11** presents the list of special status species that could occur on Fairchild AFB and includes the federal and state status and notes on habitat for each.

Table 3-11. Protected and Sensitive Species Occurring On or Near Fairchild AFB

Common Name	Scientific Name	Status	Habitat Notes
Birds			
American white pelican	*Pelecanus erythrorhynchos*	ST	Breeds primarily on isolated islands in freshwater lakes and rivers and forages in shallow areas of inland marshes, lakes, and rivers. No suitable habitat in the areas of the Proposed Action.
Common loon	*Gavia immer*	SS	Prefers lakes with coves and islands. In their winter range along ocean coasts, they occur close to shore and in bays and estuaries. Some winter inland on large reservoirs and slow-moving rivers. No suitable habitat in the areas of the Proposed Action.
Sharp-tailed grouse	*Tympanuchus phasianellus*	ST	Inhabits shrub/meadow steppe. No suitable habitat in the areas of the Proposed Action but individuals could migrate through.
Ferruginous hawk	*Buteo regalis*	ST	Inhabits shrub-steppe and grassland regions of several eastern Washington counties. Nests on cliffs, high bluffs, utility towers, trees, or on the ground. No suitable habitat in the areas of the Proposed Action but individuals could migrate through.
Upland sandpiper	*Bartramia longicauda*	SE	Inhabits grasslands and agricultural areas where grain crops, alfalfa, and grazed pastures predominate. There have been no records since 1993. No suitable habitat in the areas of the Proposed Action.
Yellow-billed cuckoo – Western U.S. Distinct Population Segment	*Coccyzus americanus*	FT	Prefers open lowland deciduous woodlands with clearings and shrubby vegetation near rivers and streams. No suitable habitat in the areas of the Proposed Action.
Reptiles and Amphibians			
Northern leopard frog	*Rana pipens*	SE	Inhabits hay fields and grassy woodlands. Requires permanent deep water for overwintering close to seasonal ponds and wetlands for breeding. No suitable habitat in the areas of the Proposed Action.
Fishes			
Bull trout	*Salvelinus confluentus*	FT	Needs cold water to survive and requires stable stream channels, clean spawning and rearing gravel, complex and diverse cover, and unblocked migratory corridors. No suitable habitat in the areas of the Proposed Action.
Plants			
American pillwort[1]	*Pilularia americana*	ST	Inhabits vernal pools. No suitable habitat in the areas of the Proposed Action.
Austin's knotweed	*Polygonum austiniae*	ST	Inhabits shrub-steppe ponderosa pine. No suitable habitat in the areas of the Proposed Action.
Inch-high rush[1]	*Juncus uncialis*	ST	Inhabits vernal pools, channel scablands, swales, and moist areas. No suitable habitat in the areas of the Proposed Action.

Common Name	Scientific Name	Status	Habitat Notes
Plants (continued)			
Mousetail[1]	*Myosurus laevicaulis*	ST	Obligate vernal pool species found on hard, bare, desiccated clay in sparsely vegetated areas of shallow pools. No suitable habitat in the areas of the Proposed Action.
Spalding's catchfly[1]	*Silene spaldingi*	FT	Inhabits open native grasslands with a minor shrub component, occasionally with scattered conifers. No suitable habitat in the areas of the Proposed Action.
Water howellia	*Howellia aquatilis*	FT	Inhabits wetlands within forested flat elevated land deeply scarred by channels. No suitable habitat in the areas of the Proposed Action.

Sources: Fairchild AFB 2012b, WDFW 2017, WNHP 2017, USFWS 2018a

Key: FT = federally threatened, SE = state-listed as endangered, ST = state-listed as threatened, SS = state sensitive.

Note: [1] Species documented on Fairchild AFB.

Federally listed species include Spalding's catchfly (*Silene spaldingii*) and water howellia (*Howellia aquatilis*) plant species, yellow-billed cuckoo (*Coccyzus americanus*), and bull trout (*Salvelinus confluentus*). There is no designated or proposed critical habitat for any federally threatened or endangered species on the installation (USFWS 2018a). No native bunchgrass habitat for the federally listed Spalding's catchfly and no suitable wetland habitat for water howellia occur within or near the areas of the Proposed Action. The Spalding's catchfly has only been observed in the southern portion of the installation and water howellia has never been observed on Fairchild AFB. The yellow-billed cuckoo is an avian species strongly associated with shrubby vegetation near rivers and streams. This habitat does not occur within or near the areas of the Proposed Action. Because there is no fish habitat on Fairchild AFB, the bull trout has been eliminated from further consideration in this EA.

There is no suitable habitat in the areas of the Proposed Action for any of the state-listed plants. Other state-listed species with no suitable habitat within the areas of the Proposed Action include: American white pelican (*Pelecanus erythrorhynchos*), upland sandpiper (*Bartramia longicauda*), common loon (*Gavia immer*), and northern leopard frog (*Rana pipens*). State-listed bird species that could migrate through the areas of the Proposed Action include the sharp-tailed grouse (*Tympanuchus phasianellus*), and ferruginous hawk (*Buteo regalis*).

3.2.2.2 MACDILL AFB

Vegetation. Institutional areas comprise approximately 3,500 acres of the approximately 5,690-acres of MacDill AFB. With the exception of ditches and smaller watercourses, the areas of the MacDill AFB Alternative (i.e., areas proposed for facility construction, demolition, and renovation under the MacDill AFB Alternative) are classified as institutional (improved and semi-improved) and BASH/Airfield. Vegetation in institutional and BASH/Airfield areas is a mixture of St. Augustine grass (*Stenotaphrum secundatum*) and bahiagrass (*Paspalum notatum*) lawns and fields, landscaping, and xeriscaping (MacDill AFB 2011a). Vegetation within the airfield is maintained and mowed in accordance with the BASH plan to minimize bird/aircraft strikes.

Wildlife. MacDill AFB is mostly urban with small tracts of wildlands limiting its use by animals that require large home ranges. Native wildlife habitat quality has been degraded because of

historic fire protection measures and non-native plant invasion. According to the 1992 *MacDill Air Force Base Wildlife Survey*, six habitat types are present on the installation including: paved runway and taxiways, mowed lawn areas; slash pine plantations; pine flatwoods; mixed pine and oak woodlands; creeks, bays and lagoons, dredged channels; and mangroves and high marsh (MacDill AFB 2017c).

The habitat of the institutional and BASH/airfield areas within or adjacent to the areas of the MacDill AFB Alternative provide limited food and cover for commonly occurring animals such as squirrels, rabbits, white-tailed deer (*Odocoileus virginianus*), armadillos (*Dasypus novemcinctus*), raccoons (*Procyon lotor*), and opossums (*Didelphis virginiana*).

Protected and Sensitive Species. More than 30 federally and state-listed species have been identified as possibly occurring on or near MacDill AFB. The list of special status species was developed based on data provided in the MacDill AFB Integrated Natural Resources Management Plan, information obtained from the Florida Fish and Wildlife Conservation Commission, and the USFWS Information for Planning and Consultation report generated for the installation (MacDill AFB 2017c, FFWCC 2017, USFWS 2018b). **Table 3-12** lists these species along with other protected species that could occur on MacDill AFB.

Seventeen federally listed species have the potential to occur near MacDill AFB including: West Indian manatee (*Trichechus manatus*), Florida scrub-jay (*Aphelocoma coerulescens*), piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), red-cockaded woodpecker (*Picoides borealis*), wood stork (*Mycteria americana*), American alligator (*Alligator mississippiensis*), Eastern indigo snake (*Drymarchon corais couperi*), hawksbill sea turtle (*Eretmochelys imbricata*), leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas*), Atlantic sturgeon (*Acipenser oxyrinchus [=oxyrhynchus] desotoi*), Brooksville bellflower (*Campanula robinsiae*), Florida bonamia (*Bonamia grandiflora*), Florida golden aster (*Chrysopsis floridana*), and pygmy fringe-tree (*Chionanthus pygmaeus*) (MacDill AFB 2013, MacDill AFB 2017c, FFWCC 2017, USFWS 2018b).

USFWS has not designated any portion of MacDill AFB as critical habitat for the federally listed species (USFWS 2018b).

Of the federally listed species, there is no suitable habitat within or near the areas of the MacDill AFB Alternative for the West Indian manatee, sea turtles, or Atlantic sturgeon. The Florida scrub jay and the red-cockaded woodpecker have not been documented on MacDill AFB and there is no suitable habitat there (MacDill AFB 2017c, MacDill AFB 2013). The American alligator is relocated off-installation when encountered and because 50 CFR 17.42(a)(2)(i) allows for take of the American alligator by DoD when acting in the course of official duties. No threatened or endangered plant species have been documented on MacDill AFB; therefore, the Brooksville bellflower, Florida bonamia, Florida golden aster, and pygmy fringe-tree are not expected to occur there. These species are not further considered in this EA.

Table 3-12. Protected and Sensitive Species Occurring On or Near MacDill AFB

Common Name	Scientific Name	Status	Habitat Notes
Mammals			
Sherman's fox squirrel	*Sciurus niger shermani*	SSC	Prefers pine flatwood habitat. No suitable habitat in the areas of the MacDill AFB Alternative.
West Indian manatee[1]	*Trichechus manatus*	FT	Summer range in Tampa Bay and tributaries. No suitable habitat in the areas of the MacDill AFB Alternative.
Birds			
Scott's seaside sparrow	*Ammodramus maritimus peninsulae*	ST	Primarily inhabits tidal marshes in Florida. No suitable habitat in the areas of the MacDill AFB Alternative; however, could occur within airspace.
Florida scrub jay	*Aphelocoma coerulescens*	FT	Florida oak scrub and scrubby flatwoods found on prehistoric and current sand dunes. No suitable habitat in the areas of the MacDill AFB Alternative.
Burrowing owl[1]	*Athene cunicularia*	ST	Nests in open, mowed areas. Suitable habitat occurs near the areas of the MacDill AFB Alternative.
Rufa red knot[1]	*Calidris canutus rufa*	FT	Uses relatively undisturbed sandy beaches and tidal flats. No suitable habitat in the areas of the MacDill AFB Alternative; however, could occur within airspace.
Snowy plover	*Charadrius alexandrinus*	ST	Occurs along shorelines in winter. Observed along the shoreline at the MacDill AFB Family Campground in 2016. No suitable habitat in the areas of the MacDill AFB Alternative; however, could occur within airspace.
Piping plover[1]	*Charadrius melodus*	FT	Occurs along shorelines in winter. No suitable habitat in the areas of the MacDill AFB Alternative; however, could occur within airspace.
Little blue heron[1]	*Egretta caerulea*	ST	Common along shorelines, ditches, and mangroves. No suitable habitat in the areas of the MacDill AFB Alternative; however, could occur within airspace.
Reddish egret[1]	*Egretta rufescens*	ST	Prefers shorelines, sandbars, and shallow salt ponds. No suitable habitat in the areas of the MacDill AFB Alternative; however, could occur within airspace.
Tricolored heron[1]	*Egretta tricolor*	ST	Common along shorelines, ditches, and mangroves. No suitable habitat in the areas of the MacDill AFB Alternative; however, could occur within airspace.
Southeastern American kestrel[1]	*Falco sparverius paulus*	ST	Prefers open stands of mature pines. No suitable habitat in the areas of the MacDill AFB Alternative.
Florida sandhill crane[1]	*Grus canadensis pratensis*	ST	Inhabits freshwater marshes, prairies, and pastures. No suitable habitat in the areas of the MacDill AFB Alternative.
American oystercatcher[1]	*Haematopus palliatus*	ST	Prefers coastal shorelines, sandbars, and tidal flats. No suitable habitat in the areas of the MacDill AFB Alternative; however, could occur within airspace.

Common Name	Scientific Name	Status	Habitat Notes
Birds (continued)			
Bald eagle[1]	*Haliaeetus leucocephalus*	BGEPA	Potential for foraging and nesting on the installation. No suitable habitat in the areas of the MacDill AFB Alternative.
Wood stork[1]	*Mycteria americana*	FT	Occurs regularly in freshwater and estuarine wetlands. No suitable habitat in the areas of the MacDill AFB Alternative; however, could occur within airspace.
Red-cockaded woodpecker	*Picoides borealis*	FE	Prefers longleaf pine stands, occasionally slash pines. No suitable habitat in the areas of the MacDill AFB Alternative.
Roseate spoonbill[1]	*Platalea ajaja*	ST	Forages and roosts along shorelines and mangrove systems. No suitable habitat in the areas of the MacDill AFB Alternative; however, could occur within airspace.
Black skimmer[1]	*Rynchops niger*	ST	Prefers open sandy beaches. No suitable habitat in the areas of the MacDill AFB Alternative; however, could occur within airspace.
Least tern[1]	*Sterna antillarum*	ST	Forages in drainage ditches and ponds on the installation. No suitable habitat in the areas of the MacDill AFB Alternative.
Reptiles and Amphibians			
American alligator[1]	*Alligator mississippiensis*	FT (S/A)	Found occasionally and relocated off installation. No suitable habitat in the areas of the MacDill AFB Alternative.
Atlantic loggerhead sea turtle[1]	*Caretta caretta*	FT	Uses beach areas for nesting. No suitable habitat in the areas of the MacDill AFB Alternative.
Green sea turtle	*Chelonia mydas*	FT	Uses beach areas for nesting. No suitable habitat in the areas of the MacDill AFB Alternative.
Leatherback sea turtle	*Dermochelys coriacea*	FE	Uses beach areas for nesting. No suitable habitat in the areas of the MacDill AFB Alternative.
Eastern indigo snake	*Drymarchon corais couperi*	FT	Occurs in woody uplands bordering mangroves. Suitable habitat occurs near the areas of the MacDill AFB Alternative.
Hawksbill sea turtle	*Eretmochelys imbricata*	FE	Uses beach areas for nesting. No suitable habitat in the areas of the MacDill AFB Alternative.
Gopher tortoise[1]	*Gopherus polyphemus*	FC, ST	Occurs in recently burned pine flatwoods. Suitable habitat occurs near the areas of the MacDill AFB Alternative.
Short-tailed snake	*Lampropeltis extenuata*	ST	Prefers xeric pine flatwoods. Suitable habitat occurs near the areas of the MacDill AFB Alternative.
Florida pine snake	*Pituophis melanoleucus mugitus*	ST	Prefers xeric pine flatwoods. Suitable habitat occurs near the areas of the MacDill AFB Alternative.

Common Name	Scientific Name	Status	Habitat Notes
Fishes			
Atlantic sturgeon (gulf subspecies)	*Acipenser oxyrinchus (=oxyrhynchus) desotoi*	FT	Occurs in most major river systems from Mississippi River to Suwannee River (Florida) and marine waters of Central and Eastern Gulf of Mexico south to Florida Bay. No suitable habitat in the areas of the MacDill AFB Alternative.
Plants and Lichens			
Brooksville bellflower	*Campanula robinsiae*	FE	Generally found in pond margins, wet prairies, or seepage areas in hardwood forests. No suitable habitat in the areas of the MacDill AFB Alternative.
Florida bonamia	*Bonamia grandiflora*	FT	Generally found in white sand scrub associated with scrub oaks and sand pine. No suitable habitat in the areas of the MacDill AFB Alternative.
Florida golden aster	*Chrysopsis floridana*	FE	Generally found in sand pine scrub. No suitable habitat in the areas of the MacDill AFB Alternative.
Pygmy fringe-tree	*Chionanthus pygmaeus*	FE	Generally found in the xeric, coarse white sand of scrub/oak scrub. No suitable habitat in the areas of the MacDill AFB Alternative.
Sea oats[1]	*Uniola paniculata*	NL[2]	Generally found in coastal sand dunes. No suitable habitat in the areas of the MacDill AFB Alternative.
Sea grapes[1]	*Coccoloba uvifera*	NL[2]	Generally found in coastal sand dunes. No suitable habitat in the areas of the MacDill AFB Alternative.

Sources: MacDill AFB 2013, MacDill AFB 2017c, FFWCC 2017, USFWS 2018b

Key: C = Candidate species (Federal designation); E = Endangered; F = Federal; NL = Not listed; S = State; SSC = Species of special concern (state designation); T = Threatened; T (S/A) = Threatened due to similarity of appearance

Notes:

[1] Species documented on MacDill AFB.

[2] Sea oats and sea grapes are not federally or state-listed species but are protected under Florida Statute 161.242.

Most of the listed species are associated with shoreline areas and the mangrove community and would not be expected to occur within or near the areas of the MacDill AFB Alternative (see Habitat Notes in **Table 3-12**); however, some listed species could occur within the installation's airspace. These federally listed species include the red knot, piping plover, and wood stork. State-listed species that could occur in the airspace include Scott's seaside sparrow (*Ammodramus maritimus peninsulae*), snowy plover (*Charadrius alexandrinus*), little blue heron (*Egretta caerulea*), reddish egret (*Egretta rufescens*), tricolored heron (*Egretta tricolor*), American oystercatcher (*Haematopus palliatus*), roseate spoonbill (*Platalea ajaja*), and black skimmer (*Rynchops niger*).

No threatened or endangered plant species have been documented on MacDill AFB; however, MacDill AFB has sea oats (*Uniola paniculata*) and sea grapes (*Coccoloba uvifera*) on its shoreline, which are protected under Florida Statutes 161.242. The areas of the MacDill AFB Alternative do not include the shoreline areas; therefore, these species are not further considered in this EA.

The following listed species could occur in burrows adjacent to the areas of the MacDill AFB Alternative: burrowing owl (*Athene cunicularia*), gopher tortoise (*Gopherus polyphemus*), Florida

pine snake (*Pituophis melanoleucus mugitus*), short-tailed snake (*Stilosoma extenuatum*), and the eastern indigo snake (*Drymarchon corais couperi*).

The burrowing owl is considered a resident on MacDill AFB. According to a 2011–2012 survey, the burrowing owl population is estimated at 12 adults although there might be more individuals during the peak of the nesting season. There were 31 active and 26 inactive owl burrows within the boundaries of the airfield at that time (MacDill AFB 2012a). There are no burrowing owls within the areas of the MacDill AFB Alternative; however, there are documented burrows along the western airfield areas.

The gopher tortoise is also a resident of MacDill AFB. This species prefers dry upland habitats including sandhills and pine flatwoods but is also found in human-altered environments. There are approximately 162 active, 31 inactive, and 17 abandoned gopher tortoise burrows in the unimproved, grassy areas on the flightline, and they also occur in smaller numbers in other locations on the installation (MacDill AFB 2012a). Based on the number of burrows found in the 2011–2012 survey, there could be as many as 119 gopher tortoises on MacDill AFB.

The Florida pine snake, short-tailed snake, and the eastern indigo snake could occur on MacDill AFB in association with gopher tortoise habitat. These species of snake also benefits from management of gopher tortoise habitat; however, they have never been observed on the installation (MacDill AFB 2017c, MacDill AFB 2012a).

3.2.3 Environmental Consequences

The biological resources analysis discusses impacts from facility construction, demolition, and renovation and aircraft operations on vegetation, wildlife, and protected and sensitive species from the Proposed Action and alternatives. For vegetation and wildlife, each species has unique, fundamental needs for food, shelter, water, and space and can be sustained only where their specific combination of habitat requirements are available. Removal of sustaining elements of a species' habitat impacts its ability to exist. Therefore, the evaluation of impacts on wildlife and vegetation is based on whether the action would cause habitat displacement resulting in reduced feeding or reproduction, removal of critical habitat for sensitive species, and/or behavioral avoidance of available habitat as a result of noise or human disturbance. The level of impacts on biological resources is based on (1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource, (2) the proportion of the resource that would be affected relative to its occurrence in the region, (3) the sensitivity of the resource to the proposed activities, and (4) the duration of ecological ramifications. Impacts on biological resources are considered significant if species or special habitats are adversely affected over large areas, or disturbances cause reductions in population size or distribution of a species of special concern.

3.2.3.1 PROPOSED ACTION

Vegetation. Short- and long-term, negligible to minor, adverse impacts on vegetation would occur. Short-term impacts would occur from temporary disturbance of vegetation from the use of heavy equipment and may include trampling and soil compaction. Areas of temporary ground disturbance would be reseeded with native vegetation. Permanent removal of vegetation and trees at new construction sites would create long-term impacts from permanent reduction in

vegetation cover on the installation. The areas of the Proposed Action are already highly disturbed from ongoing routine maintenance and landscaping activities and are of low ecological value. These areas are not considered natural vegetation areas; therefore, there would be no impacts on native vegetation.

Wildlife. Short- and long-term, negligible to minor, adverse impacts on wildlife would occur. Although some birds, small mammals, invertebrates, and other common, small wildlife species may use the areas of the Proposed Action for shelter and feeding, the abundance of wildlife in these areas is low because vegetation is regularly disturbed and there are few native plant species. Additionally, these areas would not overlap the portions of the installation where wetlands and higher-value wildlife habitat exists.

Short-term impacts on wildlife would occur from noise associated with heavy equipment use and increased human presence during facility construction, demolition, and renovation. Any increase in the frequency or intensity of noise from facility construction, demolition, and renovation could temporarily displace wildlife. The proposed construction activities would require use of heavy equipment that would generate short-term increases in noise near the project sites. Individual pieces of heavy equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 feet (see **Section 3.7**). With multiple items of equipment operating concurrently, noise levels can be high within several hundred feet of active construction sites. Wildlife species would be expected to utilize adjacent suitable habitat during construction and would return to the area once the noise from heavy equipment use has ceased. Furthermore, wildlife currently inhabiting the areas of the Proposed Action would be habituated to noise disturbances because of the existing highly urbanized environment. There could be a small increase in the frequency of startle responses or other behavioral modifications caused by the Proposed Action.

Long-term, minor, adverse impacts on wildlife would occur from the permanent loss of potential habitat for wildlife. The loss of habitat would have only minor impacts because the proposed construction activities would occur in improved or semi-improved areas that do not provide high quality habitat for wildlife species. Removal of dead trees and vegetation, which provide habitat for birds and bats, would be permanently lost. BMPs would be followed to the greatest extent possible to reduce or avoid impacts. These BMPs would include topping trees or removing dead limbs instead of removing the entire tree, leaving as much trunk height as possible, creating artificial cavities (nest boxes), and drilling into trees to replace cavities lost during tree removal.

There would be a 33.3 percent increase in KC-135 operations (annually) and a 16.3 percent increase in total aircraft operations at Fairchild AFB. Increased aircraft operations could increase the potential for BASH interactions. The Fairchild AFB BASH Plan establishes procedures and actions to minimize the potential for wildlife strikes. To prevent aircraft strikes from raptors, waterfowl, and other migratory birds, Fairchild AFB would continue to implement the BASH minimization techniques from the Plan.

Increases in noise levels or frequencies from aircraft operations could result in a change in bird and other wildlife behavior or a decrease in ability to hear. Wildlife living at and near the Fairchild AFB runway could be most affected by an increase in the intensity of noise. However,

birds and other wildlife living below the flight paths at Fairchild AFB are exposed to noise from existing operations year round and would likely be habituated to noise disturbances. The most likely, detectable response of wildlife to an increase in aircraft operations at Fairchild AFB could be a temporary change in behavior, such as flushing or some other startle response. However, birds and other wildlife have been documented to become habituated to aircraft overflights and other noises after continuous or frequent exposure. Habituation also has been frequently noted when using noise-making devices to scare birds away from crops or airfields (Larkin 1996, Efroymson et al. 2000).

Over the long term, the increased presence of aircraft and associated operational noise on and near the installation from the additional KC-135s would have negligible impacts on wildlife populations. Noise levels would increase only marginally on and near the installation. The overall noise environment would be comparable to the existing KC-135 mission. Birds and other wildlife breeding and foraging on Fairchild AFB currently either avoid loud areas or are habituated to the frequent noise from aircraft operations. The Proposed Action would cause a slight increase in the frequency of exposure to loud noises, and thus possibly an increase in startle responses by nearby wildlife.

Protected and Sensitive Species. The Proposed Action would result in no effects on the following federally listed species: Spalding's catchfly, water howellia, bull trout, and yellow-billed cuckoo. USAF is consulting with USFWS on this determination (see **Appendix A**). No native bunchgrass habitat for the federally listed Spalding's catchfly and no suitable wetland habitat for water howellia occur within or near the areas of the Proposed Action. The Spalding's catchfly has only been observed in the southern portion of the installation and water howellia has never been observed on Fairchild AFB. Additionally, the yellow-billed cuckoo is strongly associated with shrubby vegetation near rivers and streams. This habitat does not occur within or near the areas of the Proposed Action.

The Proposed Action would result in short- and long-term, minor, adverse impacts on state-listed birds migrating through the area. No suitable habitat for state-listed species exists within or near areas of the Proposed Action; however, the state-listed sharp-tailed grouse and ferruginous hawk could migrate through the area. Noise impacts on the state-listed bird species would be similar to those described for wildlife. During aircraft operations, listed and protected species living near the airfield could be affected by an increase in the frequency and intensity of noise. Protected and sensitive species near Fairchild AFB are currently and have continuously been exposed to frequent daily aircraft operations. Therefore, these species likely are habituated to aircraft operations and changes in behavior would be temporary and insignificant.

The MBTA and EO 13186 require federal agencies to avoid take of migratory birds listed in 50 CFR 10.13. The following environmental protection measures are recommended to minimize or avoid takes of migratory birds that could occur within areas of the Proposed Action:

- Any groundbreaking construction or tree-cutting activities would be performed before migratory birds return to Fairchild AFB or after all young have fledged.
- If construction is scheduled to start during the period when migratory birds are present, a site-specific survey for nesting migratory birds would be performed immediately prior to

construction by a qualified biologist. If nesting birds are found during the survey, buffer areas would be established around nests. Construction would be deferred in buffer areas until birds have left the nest. Confirmation that all young have fledged would be made by a qualified biologist.

3.2.3.2 MACDILL AFB ALTERNATIVE

Vegetation. Short- and long-term, negligible to minor, adverse impacts on vegetation would occur. Short-term impacts would occur from temporary disturbance of vegetation from the use of heavy equipment and may include trampling and soil compaction. Areas of temporary ground disturbance would be reseeded with native vegetation. Permanent removal of vegetation and trees at new construction sites would create long-term impacts from permanent reduction in vegetation cover on the installation. The areas of the MacDill AFB Alternative are already highly disturbed from ongoing routine maintenance and landscaping activities and are of low ecological value. These areas are not considered natural vegetation areas; therefore, there would be no impacts on native vegetation.

Wildlife. Short- and long-term, negligible to minor, adverse impacts on wildlife would occur. Although some birds, small mammals, invertebrates, and other common, small wildlife species may use the areas of the MacDill AFB Alternative for shelter and feeding, the abundance of wildlife in these areas is low because vegetation is regularly disturbed and there are few native plant species. Additionally, these areas would not overlap the portions of the installation where wetlands and higher-value wildlife habitat exists.

Short-term impacts on wildlife would occur from noise associated with heavy equipment use and increased human presence during facility construction, demolition, and renovation. Any increase in the frequency or intensity of noise from facility construction, demolition, and renovation could temporarily displace wildlife. The proposed construction activities would require use of heavy equipment that would generate short-term increases in noise near the project sites. Wildlife species would be expected to utilize adjacent suitable habitat and would return to the area once the noise from heavy equipment use has ceased. Furthermore, wildlife currently inhabiting the areas of the MacDill AFB Alternative would be habituated to noise disturbances because of the existing highly urbanized environment. There could be a small increase in the frequency of startle responses or other behavioral modifications caused by the MacDill AFB Alternative.

Long-term, minor, adverse impacts on wildlife would occur from the permanent loss of potential habitat for wildlife. The loss of habitat would have only minor impacts because the proposed construction activities would occur in institutional areas that do not provide high quality habitat for wildlife species. Removal of dead trees and vegetation, which could provide habitat for birds and bats, would be permanently lost. BMPs would be followed to the greatest extent possible to reduce or avoid impacts. These BMPs would include topping trees or removing dead limbs instead of removing the entire tree, leaving as much trunk height as possible, creating artificial cavities (nest boxes), and drilling into trees to replace cavities lost during tree removal.

Some of the proposed construction would occur in or adjacent to drainage ditches or near wetlands where bird species often occur. The construction activities could disturb birds that use these drainage ditches for foraging. The birds would be expected to relocate to another ditch or

other similar, suitable foraging habitat on the installation. No proposed construction activities would occur in areas where shorebirds or colonial nesting species are likely to nest.

There would be a 50.0 percent increase in KC-135 operations (annually) and a 29.0 percent increase in total aircraft operations at MacDill AFB. Increases in noise levels or frequencies from aircraft operations could result in a change in bird and other wildlife behavior or a decrease in ability to hear. Wildlife living at and near the MacDill AFB runway could be most affected by an increase in the intensity of noise. However, birds and other animals living below the flight paths at MacDill AFB are exposed to noise from existing operations year round and would likely be habituated to noise disturbances. The most likely, detectable response of wildlife to an increase in aircraft operations at MacDill AFB could be a temporary change in behavior, such as flushing or some other startle response. However, birds and other wildlife have been documented to become habituated to aircraft overflights and other noises after continuous or frequent exposure.

Over the long term, the increased presence of aircraft and associated operational noise on and near the installation from the additional KC-135s would have negligible impacts on wildlife populations. Noise levels would increase only marginally on and near the installation. The overall noise environment would be comparable to the existing KC-135 mission. Birds and other wildlife breeding and foraging on MacDill AFB currently either avoid loud areas or are habituated to the frequent noise from aircraft operations. The MacDill AFB Alternative would cause a slight increase in the frequency of exposure to loud noises, and thus possibly an increase in startle responses by nearby wildlife.

Protected and Sensitive Species. The MacDill AFB Alternative would result in short- and long-term, negligible, adverse impacts on protected and sensitive species. The MacDill AFB Alternative may affect, but is not likely to adversely affect, the federally listed red knot, piping plover, and wood stork. USAF is conducting consultation with USFWS on this determination (see **Appendix A**). Noise impacts on these listed species from the increase in aircraft operations would be minor and similar to those described for wildlife. The increase in aircraft operations could also increase the potential for BASH interactions involving these listed species. Coastal and estuarine bird species including the red knot, piping plover, and wood stork could occur in the airspace and be impacted by the increase in operations. Two fatal bird strikes involving federally listed species, one of a red knot and one of a wood stork, occurred in 2015. However, a review of 15 years of summary reports submitted as part of the Depredation Permit renewal process shows that these two incidents are anomalies. Analysis of the data from 2000 to 2015 indicates that no other recorded strikes of federally listed species have occurred outside of the two 2015 incidents (Kirkpatrick 2016).

The MacDill AFB Alternative would result in no effects on the federally listed Florida scrub jay, red-cockaded woodpecker, eastern indigo snake, Atlantic sturgeon, and all federally listed sea turtle and plant species. The Florida scrub-jay and red-cockaded woodpecker have never been documented on the installation. The eastern indigo snake is often a commensal in gopher tortoise burrows; however, the locations of gopher tortoise burrows are near but not within the areas of the MacDill AFB Alternative. Suitable habitat does not occur in the areas of the MacDill AFB Alternative for the sea turtles and plants.

State-listed species that could also occur in the airspace include Scott's seaside sparrow, snowy plover, little blue heron, reddish egret, tricolored heron, American oystercatcher, roseate spoonbill, and black skimmer. Impacts of increased aircraft operations on state-listed bird species would be similar to those discussed for federally listed birds. Suitable habitat for the gopher tortoise, Florida pine snake, short-tailed snake, and burrowing owl occurs near the areas of the MacDill AFB Alternative; however, there are no burrows within the footprints of disturbance.

Environmental protection measures similar to those described for the Proposed Action in **Section 3.2.3.2** would be followed to minimize or avoid takes of migratory birds within the areas of the MacDill AFB Alternative.

3.2.3.3 NO ACTION ALTERNATIVE

No impacts on biological resources would occur under the No Action Alternative. No facility construction, demolition, and renovation would occur, and there would be no increases in support personnel or aircraft operations. Biological resources at Fairchild AFB and MacDill AFB would remain the same as existing conditions described in **Sections 3.2.2.1** and **3.2.2.2**, respectively.

3.3 Cultural Resources

3.3.1 Definition of the Resource

Cultural resources are historic districts, sites, buildings, structures, or objects considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes. Depending on the condition and historic use, such resources might provide insight into the cultural practices of previous civilizations, or they might retain cultural and religious significance to modern groups. Cultural resources that are listed in or eligible for listing in the National Register of Historic Places (NRHP) are known as historic properties. Section 106 of the NHPA requires federal agencies to assess the impact of their undertakings on historic properties in the Area of Potential Effect (APE). The APE is the "geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (36 CFR 800.16[d]). USAF is consulting under Section 106 of the NHPA with the appropriate State Historic Preservation Officer (SHPO) for each installation and with federally recognized tribes (see **Appendix A**). As a part of the Section 106 process, USAF has defined the APE as a 0.25-mile radius around the proposed facility construction, demolition, and renovation areas. **Figures 3-1** and **3-2** show the APE for the Proposed Action and MacDill AFB Alternative, respectively.

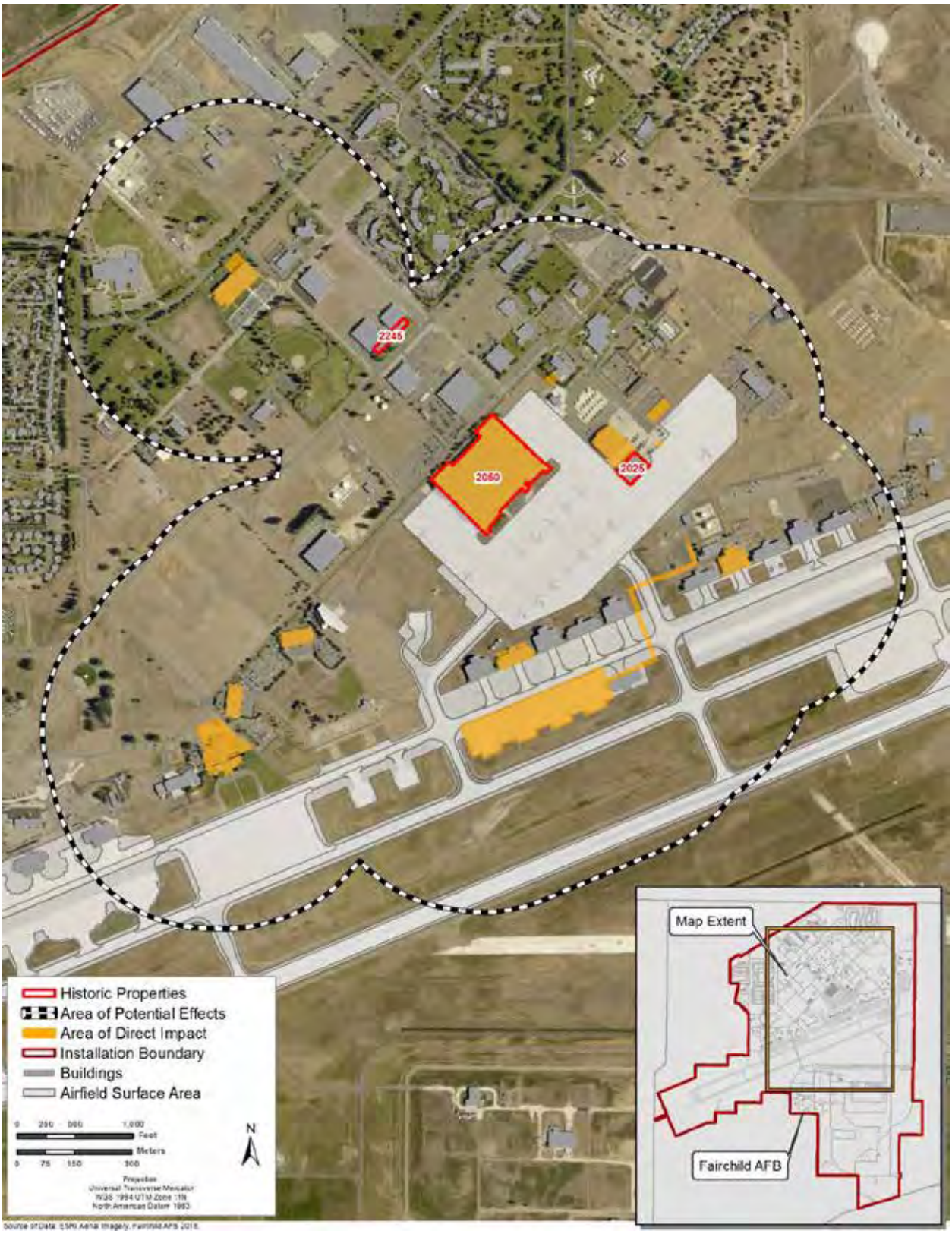

Figure 3-1. Historic Properties within the APE at Fairchild AFB

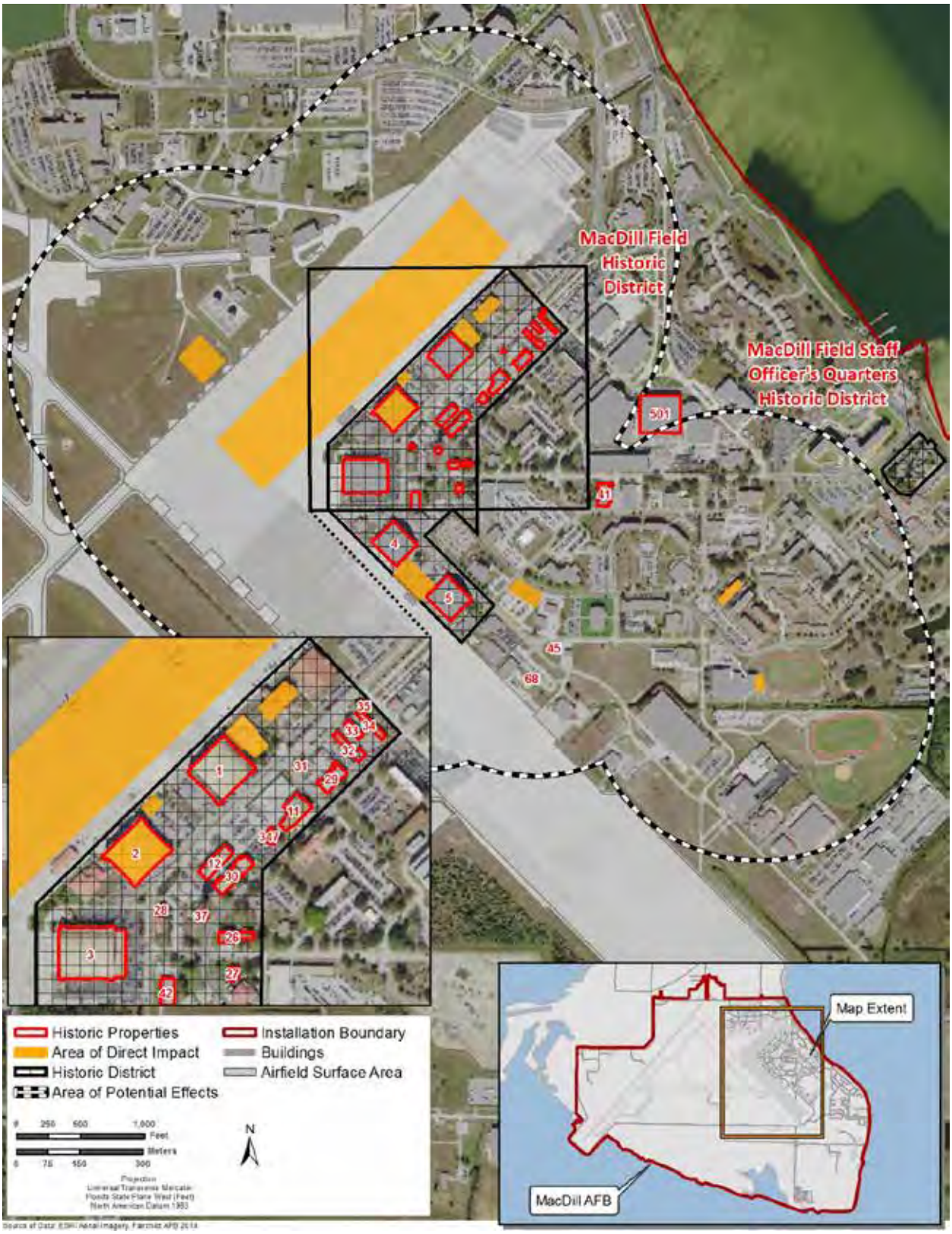

Figure 3-2. Historic Properties within the APE at MacDill AFB

Typically, cultural resources are subdivided into architectural resources, archaeological resources, and resources of traditional, cultural, or religious significance. Architectural resources include standing buildings, bridges, dams, other structures, and designed landscapes of historic or aesthetic significance. Generally, architectural resources must be more than 50 years old to warrant consideration for the NRHP. More recent structures might warrant protection if they are of exceptional importance or if they have the potential to gain significance in the future. Architectural resources at least 45 years of age were considered in this EA to account for the range in project implementation years. That is, resources that are currently 45 years of age could attain 50 years of age by the time facility construction, demolition, and renovation projects are implemented. Archaeological resources comprise areas where human activity has measurably altered the earth or deposits of physical remains are found (e.g., projectile points and bottles), but standing structures do not remain. Resources of traditional cultural or religious significance can include archaeological resources, sacred sites, structures, prominent topographic features, habitat, plants, animals, or minerals considered essential for the preservation of traditional culture.

3.3.2 Affected Environment

3.3.2.1 FAIRCHILD AFB

Architectural Resources. Fairchild AFB conducted installation-wide historic architecture surveys in 1990 and the mid-1990s and more focused surveys in 2005 and 2007. Historic properties in the APE include Buildings 2025 (snow barn), 2050 (maintenance hangar), and 2245 (administrative office) (Fairchild AFB 2018a). Building 2401 (pump station) is a historic-age building in the APE that was recently evaluated as not eligible for NRHP listing. Fairchild AFB is requesting the Washington SHPO's concurrence with this assessment separate from this EA (Paul 2018). Also present within the APE is the former Flight Line Historic District and 14 formerly contributing buildings. Fairchild AFB executed a Memorandum of Agreement with the Washington SHPO in 2012 that mitigated adverse effects from the planned demolition of the hangars comprising the historic district (Fairchild AFB 2012c). Six of the original 20 buildings have been demolished, and per the terms of the Memorandum of Agreement, the historic district is no longer eligible for NRHP listing. **Table 3-13** identifies and **Figure 3-1** shows historic properties within the Fairchild AFB APE.

Table 3-13. Historic Buildings in the Fairchild AFB APE

Building ID	Description	Year Built	NRHP Eligibility
Building 2025	Snow Barn/ Maintenance Hangar	1943	Individually Eligible
Building 2050	Maintenance Hangar	1943	Individually Eligible
Building 2245	Administrative Office	1943	Individually Eligible

Archaeological Resources. Fairchild AFB conducted archaeological surveys at the main installation in 1988 with a later resource-specific evaluation in 1998. After conducting a building survey in 1990, the Spokane City/County Historic Preservation Office determined that due to the high degree of disturbance at Fairchild AFB, no additional archaeological surveys of the installation were warranted unless there was an inadvertent discovery (Fairchild AFB 2018a).

Four historic archaeological sites have been identified on the installation, none of which are eligible for listing in the NRHP. No known archaeological sites are within the APE.

Traditional Resources. Fairchild AFB regularly consults with four federally recognized tribes as part of the NEPA and Section 106 processes: Coeur d'Alene Tribe, Confederated Tribes of the Colville Reservation, Kalispel Tribe of Indians, and Spokane Tribe of Indians. Fairchild AFB is consulting with these tribes on the Proposed Action (see **Appendix A**). No tribal sacred sites or properties of traditional religious or cultural importance have been identified on Fairchild AFB during previous consultations.

3.3.2.2 MACDILL AFB

Architectural Resources. MacDill AFB has completed several installation-wide architectural surveys that have collectively evaluated all buildings in the APE that were constructed before 1970 (MacDill AFB 2017d). A recently completed survey evaluated Cold War-era buildings constructed between 1971 and 1992. Preliminary results from this survey indicate none of the evaluated buildings are eligible for the NRHP (Vichich 2018). Historic properties previously identified in the APE include Building 501 and the MacDill Field Historic District. The MacDill Field Historic District contains 23 buildings and is eligible for NRHP listing for its association with MacDill AFB's participation in World War II, including involvement in "Project X" ferrying combat troops to the Pacific Theater and training of replacement crews for the European Theater. The district is also eligible for its architectural significance and contains examples of Spanish and Mediterranean architectural styles. Historic American Buildings Survey (HABS) documentation has been completed for all historic resources in the district, ranging from Level I to Level IV (MacDill AFB 2017d). All 23 buildings in the MacDill Field Historic District are in the APE (**Table 3-14**). These buildings are all contributing resources of the historic district, and eight of the buildings are also individually eligible for NRHP listing. **Figure 3-2** identifies historic properties within the MacDill AFB APE.

Archaeological Resources. An archaeological assessment of MacDill AFB was conducted in 1986 by the National Park Service. The assessment concluded that 59 percent of the installation, including airfield and cantonment areas, had been disturbed to the point that there would be no likelihood of finding archaeological resources (MacDill AFB 2017d). Based on concerns from the SHPO and Seminole Tribe of Florida regarding the reliability of the 1986 survey, MacDill AFB initiated a base-wide Phase I archaeological survey in 2017. MacDill AFB has identified nine archaeological sites on the installation, none of which are within the APE.

Traditional Resources. MacDill AFB regularly consults with three federally recognized tribes as part of the NEPA and Section 106 processes: Seminole Tribe of Florida, Miccosukee Tribe of Indians of Florida, and Seminole Nation of Oklahoma. MacDill AFB is consulting with these tribes on the MacDill AFB Alternative (see **Appendix A**). One archaeological site on the installation is known to contain human remains and related artifacts and is culturally sensitive. This site is not within the APE. No other tribal sacred sites or properties of traditional religious or cultural importance have been identified on MacDill AFB during previous consultations.

Table 3-14. MacDill Field Historic District Buildings

Building ID	Description	Year Built	NRHP Eligibility	HABS Level
Hangar 1	Hangar	1941	Individually Eligible, Contributing	III
Hangar 2	Hangar	1941	Individually Eligible, Contributing	I
Hangar 3	Hangar	1941	Individually Eligible, Contributing	I
Hangar 4	Hangar	1941	Individually Eligible, Contributing	III
Hangar 5	Hangar	1941	Individually Eligible, Contributing	III
Building 11	Warehouse	1941	Contributing	III
Building 12	Maintenance Shop	1941	Contributing	III
Building 26	Fire Station	1941	Individually Eligible, Contributing	I
Building 27	Photographic and Mapping Facility	1941	Contributing	II
Building 28	Storage Shed	1942	Contributing	II
Building 29	Warehouse	1941	Contributing	II
Building 30	Quartermaster Warehouse, Commissary	1941	Individually Eligible, Contributing	I
Building 31	Maintenance Shop	1941	Contributing	III
Building 32	Maintenance Shop	1941	Contributing	III
Building 33	Maintenance Shop	1941	Contributing	III
Building 34	Civil Engineering Storage Shed	1941	Contributing	III
Building 35	Maintenance Shop	1941	Contributing	II
Building 37	Water Tower	1941	Contributing	IV
Building 41	Theater	1941	Individually Eligible, Contributing	I
Building 42	Instrument Laboratory	1942	Contributing	II
Building 45	Vehicle Fuel Station	1942	Contributing	III
Building 68	Storage Shed	1941	Contributing	III
Building 347	Civil Engineering Offices	1944	Contributing	III

3.3.3 Environmental Consequences

Impacts on cultural resources result from actions that change culturally valued elements of a resource or restrict access to cultural resources. Impacts on cultural resources may be short-term or long-term; direct or indirect; and negligible, minor, moderate, or significant in magnitude. Direct impacts can result from physically altering, damaging, or destroying all or part of a resource. Indirect impacts can occur from alterations to characteristics of the surrounding environment that contribute to the importance of the resource; introducing visual, atmospheric, or audible elements that are out of character with the property or that alter its setting or feeling. Under Section 106 of the NHPA, USAF must determine if the Proposed Action and alternatives would result in an "adverse effect" on historic properties and must avoid, minimize, or mitigate such effects if they would occur. For the purposes of Section 106, an adverse effect is one that changes elements or characteristics of a historic property that make the property eligible for

listing in the NRHP. This analysis focuses on cultural resources that are listed in or eligible for listing in the NRHP and incorporates USAF findings of effect under Section 106 of the NHPA.

3.3.3.1 PROPOSED ACTION

Facility renovation would occur at Building 2050, which is eligible for listing in the NRHP. Renovations to this building would reconfigure and update interior spaces to accommodate changes in maintenance, storage, and administrative functions. Such renovations have occurred periodically throughout the building's history to accommodate changes in mission needs, and the proposed renovations would not adversely affect the building's eligibility for NRHP listing. Renovations at Buildings 1007 and 1017 would have no adverse effect on the former Flight Line Historic District, which is no longer eligible for NRHP listing.

Visual intrusion of proposed facility additions adjacent to Building 2045 and construction of the base and squadron operations facility would have no adverse impact on cultural resources in the APE. The proposed construction would occur in the context of an active military installation and would represent incremental changes to the setting surrounding Buildings 2025, 2050, and 2245. These projects would have no adverse effect on historic properties under Section 106 of the NHPA.

The Proposed Action would not be expected to impact archaeological or traditional resources because no such properties have been identified within the APE. Ground-disturbing activities would occur in previously disturbed areas in the cantonment area, and it is highly unlikely that any previously undocumented archaeological resources would be encountered during facility construction, demolition, and renovation. In the event of an unanticipated or inadvertent discovery, USAF would comply with Section 106 of the NHPA, as specified in standard operating procedures described in the Fairchild AFB Integrated Cultural Resources Management Plan.

Impacts on cultural resources from population increase or increased noise from aircraft operations are not expected. Although the Proposed Action would result in a 16.3 percent increase in total operations at Fairchild AFB, noise associated with this level of increase would generally not be perceptible. Further, proposed levels of aircraft activity and noise at Fairchild AFB would be below conditions in 2007, which was a recent peak in activity when operations averaged 203 per day (Fairchild AFB 2007a).

Fairchild AFB is consulting with the Washington SHPO to request concurrence that the Proposed Action would have no adverse effect on historic properties under Section 106 of the NHPA (see **Appendix A**).

3.3.3.2 MACDILL AFB ALTERNATIVE

Facility renovations would occur at Hangar 2, which is individually eligible for NRHP listing and also a contributing resource of the MacDill Field Historic District. Renovations at Hangar 2 would update interior spaces to accommodate changes in maintenance, storage, and administrative functions. Such renovations have occurred periodically in the past at Hangar 2, and the proposed renovations would not affect character-defining features of the hangar or its integrity and would have no adverse effect under Section 106 of the NHPA. The proposed squadron operations facility and the warehouse facility would be constructed within the MacDill

Field Historic District and would be designed to be compatible with the district's historic architectural styles and consistent with other recent buildings constructed within the district to minimize physical and visual intrusion on the district. With these considerations, the proposed construction would have no adverse effect on the MacDill Field Historic District under Section 106 of the NHPA.

Visual intrusion of proposed facility additions and construction of the fuel cell hangar outside of the MacDill Field Historic District would have no adverse impact on cultural resources in the APE. The proposed construction would occur in the context of an active military installation and would adhere to MacDill AFB's environmental design guidelines. These projects would have no adverse effect on historic properties under Section 106 of the NHPA.

The MacDill AFB Alternative would not be expected to impact archaeological or traditional resources because no such properties have been identified within the APE. Ground-disturbing activities would primarily occur in previously disturbed areas in the cantonment area, and it is highly unlikely that any previously undocumented archaeological resources would be encountered during facility construction, demolition, or renovation. A cultural resources monitor would be present during construction in any undeveloped areas. In the event of an unanticipated or inadvertent discovery, USAF would comply with Section 106 of the NHPA, as specified in standard operating procedures described in the MacDill AFB Integrated Cultural Resources Management Plan (MacDill AFB 2017d).

Impacts on cultural resources from population increase or increased noise from aircraft operations are not expected. Although the alternative would result in a 29.0 percent increase in total operations at MacDill AFB, noise associated with this level of increase would generally not be perceptible. Further, proposed levels of aircraft activity and noise at MacDill AFB would be below conditions in 2007, which was a recent peak in activity when operations averaged 163 per day (MacDill AFB 2008a).

MacDill AFB consulted with the Florida SHPO and requested concurrence that the MacDill AFB Alternative would have no adverse effect on historic properties under Section 106 of the NHPA. The Florida SHPO concurred with that determination on May 30, 2018 (see **Appendix A**).

3.3.3.3 NO ACTION ALTERNATIVE

The No Action Alternative would not impact cultural resources. No facility construction, demolition, or renovation would occur, and there would be no changes in aircraft operations. Cultural resources at both installations would remain unchanged when compared to existing conditions identified in **Sections 3.3.2.1** and **Section 3.3.2.2**.

3.4 Geological Resources

3.4.1 Definition of the Resource

Geological resources consist of the Earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of geology, topography and physiography, soils, and, where applicable, geologic hazards.

Geology is the study of the Earth's composition and provides information on the structure and configuration of surface and subsurface features. Such information derives from field analysis based on observations of the surface and borings to identify subsurface composition.

Topography and physiography pertain to the general shape and arrangement of a land surface, including its height and the position of its natural and human-made features.

Soils are the unconsolidated materials overlying bedrock or other parent material. Soils are typically described in terms of their complex type, slope, and physical characteristics. Differences among soil types, in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential, affect their abilities to support certain applications or uses. In appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land use.

Prime farmland is protected under the Farmland Protection Policy Act (FPPA) of 1981 and is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is available for these uses. The intent of the FPPA is to minimize the extent that federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. The implementing procedures of the FPPA and Natural Resources Conservation Service (NRCS) require federal agencies to evaluate the adverse impacts (direct and indirect) of their activities on prime and unique farmland and farmland of statewide and local importance, and to consider alternative actions that could avoid adverse impacts. Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops. Farmland of statewide and local importance are lands that do not meet the criteria for prime or unique farmland, but are considered to be important for the production of food, feed, fiber, forage, and oilseed crops by state or local agencies (NRCS Undated).

Geologic hazards are natural geologic events that can endanger human lives and threaten property. Examples of geologic hazards include erosion, earthquakes, landslides, ground subsidence, and sinkholes.

3.4.2 Affected Environment

3.4.2.1 FAIRCHILD AFB

Regional Geology. Fairchild AFB is within the Columbia Plateau physiographic province and the Channeled Scablands area of the Columbia Basin (Fairchild AFB 2012b, WDNR 2018). The Columbia Basin was formed by Columbia Plateau lava flows and glacial floodwaters that widened the Spokane River valley and deposited a layer of gravel up to 500 feet thick. Bedrock underlying the Columbia Basin is basalt that covered and lapped up against Precambrian granitic rock during a series of lava flows in the Miocene Epoch (Fairchild AFB 2012b). Deposits of glacial till, glacial moraine, or glacial outwash blanket the basin and the Channeled Scablands are characterized by a thin layer of soil alternating with basalt outcroppings and areas of deeper soils (USFS 1994, Fairchild AFB 2012b).

Basalt outcroppings, the result of cooled lava, are the prominent geological features on the installation and can be seen along the eastern boundary. Perched water tables occur in many areas of the installation and are associated with stratified sand and clay soil layers deposited by

the historic catastrophic floods. These areas present challenges to infrastructure design, stormwater management, siting of buried utilities and foundations, construction scheduling, and groundwater management (Fairchild AFB 2012b).

Topography and Physiography. The Columbia Basin is characterized by steep river canyons, extensive plateaus, and tall and sinuous ridges (WDNR 2018). Rolling hills of loess cover unglaciated areas in the southern and eastern portions of the basin (USFS 1994). Fairchild AFB is surrounded by mountains and rolling terrain; however, the topography of the installation and its immediate surroundings is generally flat with an average elevation of 2,430 feet above mean sea level (MSL) (Fairchild AFB 2012b). The topography within the proposed facility construction, demolition, and renovation areas ranges from approximately 2,420 feet above MSL to 2,440 feet above MSL (USGS 2017).

Soils. The NRCS mapped two soil series, Cheney and Phoebe, within Fairchild AFB in the 2006 update to the *1968 Soil Survey of Spokane County, Washington* (NRCS 2006). The NRCS Web Soil Survey mapped Phoebe-dry Bong complex soil (0 to 8 percent slopes) as the only soil type within all of the proposed facility construction, demolition, and renovation areas except for a portion of the proposed fuel line replacement and fitness center addition. These areas contain Cheney ashy silt loam soil (0 to 8 percent slopes) (NRCS 2018a). Details about both soils and their descriptions are provided in **Table 3-15**. The soils within the facility construction, demolition, and renovation areas have been previously disturbed by construction or landscaping. Surface cover in these areas is a combination of pavement, buildings, and landscaped lawn.

Table 3-15. Soils Associated with the Proposed Action

Soil Type	Characteristics	Erosion K Factor[1]	Farmland Classification
Phoebe-dry Bong complex (0 to 8 percent slopes)	Very deep, somewhat excessively drained soils of moderate permeability. Not hydric.	0.15	Prime farmland if irrigated
Cheney ashy silt loam (0 to 8 percent slopes)	Very deep, somewhat excessively drained soils of moderate permeability. Not hydric.	0.37	Prime farmland

Source: NRCS 2006, NRCS 2018a

Note: [1] Erosion K Factor indicates the susceptibility of a soil to sheet and rill erosion by water. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Both soils found in the proposed facility construction, demolition, and renovation areas are considered prime farmland. Cheney ashy silt loam soils, 0 to 8 percent slopes, are considered prime farmland and Phoebe-dry Bong complex soils, 0 to 8 percent slopes, are considered prime farmland if irrigated (NRCS 2006, NRCS 2018a). Although these soils are classified as prime farmland, all land within Fairchild AFB is used for military mission purposes, has been previously disturbed and modified due to development, and is not currently available for agricultural use. As per Section 1540(c) (1) of the FPPA, “farmland” does not include land already in or committed to urban development or water storage where ‘already in’ urban development includes, among several factors, lands identified as an urbanized area on a Census Bureau Map. Fairchild AFB is identified as an urbanized area on the 2010 Census

Urbanized Area Reference Map for Spokane, Washington; therefore, soils within the proposed facility construction, demolition, and renovation areas are not considered "farmland" and are not subject to the FPPA (U.S. Census Bureau 2010a).

Geologic Hazards. The U.S. Geological Survey (USGS) produces seismic hazard maps based on current information about the frequency and intensity of earthquakes. The maps show the levels of horizontal shaking that have a 2 in 100 chance of being exceeded in a 50-year period. Shaking is expressed as a percentage of the force of gravity (percent g). In general, little or no damage is expected at values less than 10 percent g, moderate damage could occur at 10 to 20 percent g, and major damage could occur at values greater than 20 percent g. The 2014 National Seismic Hazard map shows that that Fairchild AFB has a seismic hazard rating of approximately 8 to 16 percent g. Therefore, Fairchild AFB is at moderate risk from geologic hazards such as earthquakes (USGS 2014a).

3.4.2.2 MACDILL AFB

Regional Geology. MacDill AFB is situated in the Gulf Coastal Lowlands physiographic province and the Pamlico Terrace. There are three principal lithologic sequences in the area. The surficial unit is unconsolidated sand, clay, and marl. This unit may include remnants of the Hawthorn Formation composed of sand, clay, and thin lenses of limestone. Sands in this unit range from 5 to 20 feet thick with clay layers up to 40 feet thick. This surficial layer is very thin to absent on the eastern side of the installation, and underlying limestone formations may outcrop in this area. Underlying the surficial layer are the Tampa and Suwannee limestones, which range from 250 to 500 feet thick. Below this layer is the Ocala Group, consisting of Avon Park, Lake City, and Oldsmar limestones; and the Cedar Keys Limestone, which are approximately 2,300 feet deep (MacDill AFB 2017c).

Topography and Physiography. The geologic features of MacDill AFB are consistent with the generally flat, sandy terrain of the surrounding area and the Pamlico Terrace. The Pamlico Terrace rises gently from the coast to approximately 25 feet above MSL. Elevations on the installation range from sea level at the southern edge to approximately 15 feet above MSL in the northern portions; however, much of the installation is less than 5 feet above MSL (MacDill AFB 2017c). The topography within the proposed facility construction, demolition, and renovation areas ranges from approximately 5 feet above MSL to 8 feet above MSL (USGS 2015).

Soils. The NRCS mapped eight soil series within the MacDill AFB in the 1989 *Soil Survey of Hillsborough County, Florida*. These soil series include Arents, Malabar, Myakka, Pomello, St. Augustine, Tavaress, Urban Land, and Wabasso (NRCS 1989). The NRCS Web Soil Survey mapped Urban Land as the only soil type within all of the proposed facility construction, demolition, and renovation areas (NRCS 2018b). Soils are classified as Urban Land where existing development has altered or obscured the original soils beyond identification and are described in **Table 3-16** (NRCS 1989). Most of the soil at the airfield and cantonment area on MacDill AFB is fill derived from dredging activities in surrounding areas that was used during construction of the installation to fill existing swamps and create stable construction surfaces (MacDill AFB 2017d). Surface cover in the proposed construction areas is currently a combination of pavement, buildings, and landscaped lawn.

Table 3-16. Soils Associated with the MacDill AFB Alternative

Soil Type	Characteristics[1]	Farmland Classification
Urban Land (0 to 5 percent slopes)	85 percent or more of the surface is covered by impervious surfaces and artificially drained. Not hydric.	Not prime farmland

Sources: NRCS 1989, NRCS 2018b
Note: [1] The NRCS does not rate Urban Land for characteristics such as water capacity or erosion potential.

Erosion is an ongoing problem on portions of MacDill AFB such as along Gadsden Point at the southeastern corner of the Bay Palms Golf Complex, which is outside of the proposed construction areas. Additionally, sand often washes into the boat channel leading to the installation's marina. Continued sea-level rise associated with climate change is likely to exacerbate shoreline erosion (FOCC 2010)

The proposed facility construction, demolition, or renovation areas do not contain soils classified as prime or unique farmland or farmland of statewide or local importance (NRCS 2018b).

Geologic Hazards. Sinkholes are common in Hillsborough County, but are uncommon on MacDill AFB because of overlying impervious layers of clay, limited groundwater recharge, and the presence of a slow discharge zone for the Floridian aquifer. Sinkhole activity at MacDill AFB is minimal with only one sinkhole identified during a 1985 study (MacDill AFB 2017c). There has also been a considerable amount of fill material placed on MacDill AFB to provide adequate land for development.

MacDill AFB is at minimal risk from geologic hazards such as earthquakes because Florida lies on a passive continental margin with a stable transition between continental and oceanic crust. The 2014 National Seismic Hazard map shows that MacDill AFB has a seismic hazard rating of approximately 2 to 4 percent g (USGS 2014a), making the risk of damage from seismic activity minimal.

3.4.3 Environmental Consequences

Protection of unique geological features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating potential impacts of a proposed action on geological resources. Generally, adverse impacts can be avoided or minimized if proper construction techniques, erosion-control measures, and structural engineering design are incorporated into project development.

Impacts on geological resources would be significant if they would substantially alter the lithology (i.e., the character of a rock formation), stratigraphy (i.e., the layering of sedimentary rocks), and geological structures that control groundwater quality, distribution of aquifers and confining beds, and groundwater availability; or substantially change the soil composition, structure, or function within the environment.

3.4.3.1 PROPOSED ACTION

There would be no impacts on geological resources from the additional KC-135 airframes, the addition of personnel and dependents, the increase in KC-135 operations and maintenance activities, interior renovations, or the flightline gate relocation at Fairchild AFB. The additional

KC-135 airframes would remain on paved surfaces and would not result in soil disturbance or compaction. Neither the addition of personnel and dependents nor the proposed KC-135 operations in existing training airspaces and areas would result in any ground disturbance. KC-135 maintenance activities would not change from those currently practiced on the existing fleet of KC-135s at Fairchild AFB; therefore, soil contamination from spills would be avoided and minimized through continuation of existing practices (see **Section 3.5** for additional analysis related to spill prevention and control). All proposed renovation projects, except the pavement replacement at Building 1017 and pavement and fuel line replacements on the parking ramp, would be limited to interior updates within existing facility footprints; therefore, no ground disturbance would result from these activities. The Proposed Action has potential to impact geological resources during proposed facility construction and demolition projects, and some renovation (i.e., upgrades to the fuel hydrant system and pavement replacement on the parking ramp and surrounding Building 1017) projects.

Regional Geology. The Proposed Action would not alter geological structures or features and would have no impact on regional geology.

Topography and Physiography. Long-term, negligible, adverse impacts would occur to the natural topography as a result of demolition, site preparation (i.e., grading, excavating, and recontouring), and construction activities associated with the Proposed Action. However, the proposed facility construction, demolition, and renovations areas are mostly flat, and disturbance of these areas would not appreciably change local topography.

Soils. Short- and long-term, minor, adverse impacts on soils would occur. Short-term impacts would result from soil disturbance, compaction, and erosion during the proposed facility construction, demolition, renovation (i.e., fuel hydrant system upgrades and pavement replacement) projects. Soil disturbance, compaction, and erosion would occur during demolition of existing paved surfaces and buildings; site preparation; and expansion, construction, or replacement of impervious surfaces. A total ground area of approximately 581,890 ft^2 would be disturbed; however, this area could be smaller because some construction and demolition projects overlap with one another. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in temporarily disturbed areas and would be eliminated within the footprint of new buildings and pavement. Loss of soil structure due to compaction from foot and construction vehicle/equipment traffic could result in changes in drainage patterns and increased erosion and sedimentation. However, soils within the proposed facility construction, demolition, renovation (i.e., fuel hydrant system upgrades and pavement replacement) areas have already been generally disturbed and compacted through previous construction and landscaping. Long-term impacts would result from permanent vegetation removal and the increase in impervious surfaces resulting from proposed construction. The total 34,172 ft^2 increase in impervious surfaces would result in increased rates of erosion due to increased stormwater runoff flows. The footprint of Building 1 and its associated parking lot, which are proposed to be demolished, and any currently vegetated portions of the fuel line replacement route would be re-vegetated following project completion. Additionally, pavement replacement at Building 1017 and the parking ramp would not result in any additional areas of impervious surface on the installation. Therefore, no long-term impacts would occur from the proposed

demolition and renovation (i.e., fuel hydrant system upgrades or pavement replacement) projects.

Short- and long-term impacts would be minimized through the implementation of environmental protection measures and BMPs including erosion and sediment control measures. Such environmental protection measures would be included as part of project-specific and installation Erosion and Sediment Control Plans (ESCPs). Measures could include installing silt fencing and sediment traps, applying water to disturbed soil, decompacting soils, and revegetating disturbed areas as soon as possible after the disturbance, where possible. These measures would reduce soil compaction and loss of soil productivity and would minimize the risk of erosion and sedimentation. See **Section 3.12** for additional analysis of potential impacts from erosion and sedimentation associated with stormwater runoff. Implementation of environmental protection measures would also minimize the potential for and extent of contamination associated with any spills from construction equipment (see **Section 3.5** for discussion of potential spills). Additionally, site-specific soil testing would be conducted prior to, or during, construction or demolition, as required, to determine if limitations exist and to determine appropriate measures to minimize potential adverse impacts.

Although the soils in the proposed facility construction, demolition, renovation areas have the physical properties necessary for classification as prime farmland soils, they are in an urbanized area and, therefore, are not subject to the FPPA. No impacts on prime farmland soils would occur.

Geologic Hazards. Long-term, minor, adverse impacts could result from geologic hazards. Earthquake activity could result in adverse impacts on humans and property. However, all new construction would be designed consistent with the requirements established in the Unified Facilities Criteria (UFC) 3-310-04, *Seismic Design for Buildings*, and EO 13717, *Establishing a Federal Earthquake Risk Management Standard*, which would reduce the potential for adverse impacts associated with structural failure during or following a seismic event.

3.4.3.2 MACDILL AFB ALTERNATIVE

There would be no impacts on geological resources from the additional KC-135 airframes, the addition of personnel and dependents, the increase in KC-135 operations and maintenance activities, or interior renovations at MacDill AFB. The additional KC-135 airframes would remain on paved surfaces and would not result in soil disturbance or compaction. Neither the addition of personnel and dependents nor the proposed KC-135 operations in existing training airspaces and areas would result in any ground disturbance. KC-135 maintenance activities would not change from those currently practiced on the existing fleet of KC 135s at MacDill AFB; therefore, soil contamination from spills would be avoided and minimized through continuation of existing practices (see **Section 3.5** for additional analysis related to spill prevention and control). All proposed renovation projects, except the North Ramp project, would be limited to interior updates within existing facility footprints; therefore, no ground disturbance would result from these activities. The MacDill AFB Alternative has potential to impact geological resources during proposed facility construction, demolition, and North Ramp renovation (i.e., upgrades to the fuel hydrant system and pavement repairs and upgrades on the North Ramp) projects.

Regional Geology. The MacDill AFB Alternative would not alter geological structures or features and would have no impact on regional geology.

Topography and Physiography. The MacDill AFB Alternative would have no impact on topography. The topography in the construction, demolition, and North Ramp renovation project areas has been modified from its original condition and is level. The proposed facility construction, demolition, and North Ramp renovation would require minimal grading and would not further modify topography from its existing condition.

Soils. Short- and long-term, minor, adverse impacts on soils would occur. Short-term impacts would result from soil disturbance, compaction, and erosion during the proposed facility construction, demolition, and North Ramp renovation projects. Soil disturbance, compaction, and erosion would occur during demolition of existing paved surfaces and buildings; site preparation; and expansion, construction, or replacement of impervious surfaces. A total ground area of approximately 1,542,000 ft^2 would be disturbed; however, this area could be smaller because demolition of Building 44 overlaps with the proposed squadron operations facility. Soil productivity would decline in temporarily disturbed areas and would be eliminated within the footprint of new buildings and pavement. Loss of soil structure due to compaction from foot and construction vehicle/equipment traffic could result in changes in drainage patterns and increased erosion and sedimentation. However, proposed facility construction, demolition, and North Ramp renovation areas have already been generally disturbed and compacted through previous construction or landscaping. Long-term impacts would result from permanent vegetation removal and the increase in impervious surfaces resulting from proposed construction. The total 104,500 ft^2 increase in impervious surfaces would result in increased rates of erosion due to increased stormwater runoff flows. The proposed demolition projects and the North Ramp renovation project would not result in any additional areas of impervious surface on the installation; therefore, no long-term impacts would occur from these projects.

Short- and long-term impacts would be minimized through the implementation of environmental protection measures and BMPs including erosion and sediment control measures. Such environmental protection measures would be included as part of project-specific ESCPs and Stormwater Pollution Prevention Plans (SWPPP) and the MacDill SWPPP. Measures could include installing silt fencing and sediment traps, applying water to disturbed soil, decompacting soils, and revegetating disturbed areas as soon as possible after the disturbance, where possible. These measures would reduce soil compaction and loss of soil productivity and would minimize the risk of erosion and sedimentation. See **Section 3.12** for additional analysis of potential impacts from erosion and sedimentation associated with stormwater runoff. Implementation of environmental protection measures would also minimize the potential for and extent of contamination associated with any spills from construction equipment (see **Section 3.5**). Additionally, site-specific soil testing would be conducted prior to, or during, construction or demolition, as required, to determine if limitations exist and to determine appropriate measures to minimize potential adverse impacts.

No prime or other important farmland soils occur in the proposed facility construction, demolition, renovation areas; therefore, no impacts on prime farmland soils would occur.

Geologic Hazards. Long-term, negligible, adverse impacts could result from geologic hazards. Because sinkhole activity at MacDill AFB is minimal, it is unlikely the proposed facility construction, demotion, and renovation projects would be affected by this geological hazard. Although unlikely, earthquake activity could result in adverse impacts on humans and property. New construction would be designed consistent with the requirements established in the UFC 3-310-04 and EO 13717, which would reduce the potential for adverse impacts associated with structural failure during or following a seismic event.

3.4.3.3 NO ACTION ALTERNATIVE

No impacts on geological resources would occur under the No Action Alternative. No facility construction, demolition, and renovation would occur, and there would be no increases in support personnel or aircraft operations. Geological resources at Fairchild AFB and MacDill AFB would remain the same as existing conditions identified in **Sections 3.4.2.1** and **Section 3.4.2.2**, respectively.

3.5 Hazardous Materials and Wastes

3.5.1 Definition of the Resource

Hazardous Materials, Hazardous Wastes, and Petroleum Products. Hazardous materials are defined by 49 CFR 171.8 as hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions in 49 CFR § 173. Hazardous wastes are defined by the Resource Conservation and Recovery Act (RCRA) at 42 USC § 6903(5), as amended by the Hazardous and Solid Waste Amendments, as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."

Petroleum products include crude oil or any derivative thereof, such as gasoline, diesel, or propane. They are considered hazardous materials because they present health hazards to users in the event of incidental releases or extended exposure to their vapors.

Evaluation of hazardous materials and wastes focuses on the storage, transportation, handling, and use of hazardous materials, as well as the generation, storage, transportation, handling, and disposal of hazardous wastes. In addition to being a threat to humans, the improper release or storage of hazardous materials, hazardous wastes, and petroleum products can threaten the health and well-being of wildlife species, habitats, soil systems, and water resources.

Special Hazards. Special hazards are substances that might pose a risk to human health and are addressed separately from hazardous materials and hazardous wastes. Special hazards include asbestos-containing materials (ACMs), lead-based paint (LBP), and polychlorinated biphenyls (PCBs), all of which are typically found in older buildings and utilities infrastructure.

Asbestos is regulated by USEPA under the Clean Air Act; Toxic Substances Control Act; and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). USEPA has established that any material containing more than 1 percent asbestos by weight is considered an ACM. ACMs are generally found in building materials such as floor tiles, mastic, roofing materials, pipe wrap, and wall plaster. ACMs might be present in buildings on Fairchild AFB and MacDill AFB. LBP is found in many surface coatings on Fairchild AFB and MacDill AFB. PCBs are man-made chemicals that persist in the environment and were widely used in building materials (e.g., caulk) and electrical products prior to 1979. Structures constructed prior to 1979 potentially include PCB-containing building materials.

Environmental Contamination. CERCLA governs response or cleanup actions to address releases of hazardous substances, pollutants, and contaminants into the environment, to include at federal facilities such as Fairchild AFB and MacDill AFB. The Defense Environmental Restoration Program was formally established by Congress in 1986 to provide for the cleanup of Department of Defense property at active installations, Base Realignment and Closure installations, and formerly used defense sites throughout the United States and its territories. The two restoration programs under the Defense Environmental Restoration Program are the Environmental Restoration Program (ERP) and the Military Munitions Response Program (MMRP). The ERP addresses contaminated sites while the MMRP addresses nonoperational military ranges and other sites suspected or known to contain unexploded ordnance (UXO), discarded military munitions, or munitions constituents. Each site is investigated and appropriate remedial actions are taken under the supervision of applicable federal and state regulatory programs. When no further remedial action is necessary for a given site, the site is closed and it no longer represents a threat to human health.

Radon. Radon is a naturally occurring odorless and colorless radioactive gas found in soils and rocks that can lead to the development of lung cancer. Radon tends to accumulate in enclosed spaces, usually those that are below ground and poorly ventilated (e.g., basements). USEPA established a guidance radon level of 4 picocuries per liter (pCi/L) in indoor air for residences, and radon levels above this amount are considered a health risk to occupants.

3.5.2 Affected Environment

3.5.2.1 FAIRCHILD AFB

Hazardous Materials, Petroleum Products, and Hazardous Wastes. Fairchild AFB uses hazardous materials and petroleum products such as liquid fuels, aircraft deicer, pesticides, and solvents for everyday operations. The use of these hazardous materials and petroleum products results in the generation and storage of hazardous wastes and used petroleum products on the installation. Fairchild AFB is a RCRA Large Quantity Generator with facility identification number WA9571924647 (Fairchild AFB 2016a). RCRA Large Quantity Generators generate 1,000 kilograms per month or more of hazardous waste or more than 1 kilogram per month of acutely hazardous waste. Within the areas of the Proposed Action, hazardous materials, hazardous wastes, and petroleum products are used and generated at Buildings 2007, 2045, and 2050 (Fairchild AFB 2016a).

USAF installations manage hazardous materials through AFI 32-7086, *Hazardous Materials Management*, and hazardous wastes through AFI 32-7042, *Waste Management*. Fairchild AFB

has implemented installation-specific hazardous materials and hazardous waste management plans. These plans define roles and responsibilities, addresses record keeping requirements, and provides spill contingency and response requirements (Fairchild AFB 2014b, Fairchild AFB 2016a).

Special Hazards. ACMs on Fairchild AFB are managed in accordance with the installation's asbestos management plan (Fairchild AFB 2016b) and through a database that contains detailed and updated information on surveys and abatement actions. ACMs are generally maintained in place until the building is renovated or demolished. Within the areas of the Proposed Action, previous surveys have identified ACMs in Buildings 1, 1017, and 2050 (Fairchild AFB 2016c). The other buildings associated with the Proposed Action might also contain ACMs.

The installation's lead exposure and LBP management plan provides guidance on how to protect USAF personnel and the public from exposure and the management and disposal of LBP (Fairchild AFB 2016d). Fairchild AFB has conducted surveys for LBP in many buildings. Within the areas of the Proposed Action, surveys have identified LBP in Buildings 1, 1017, and 2050 (Fairchild AFB 2016c). The other buildings associated with the Proposed Action might also contain LBP.

Buildings 1, 1007, 1017, and 2050 were constructed prior to 1979 and, therefore, have the greatest potential to contain PCBs in building material (Fairchild AFB 2018b). Older electrical infrastructure, such as light fixtures and surge protectors, within these buildings might also contain PCBs.

Environmental Contamination. As of December 2015, there are 60 active ERP and 3 active MMRP sites on Fairchild AFB (Fairchild AFB 2015a). This EA focuses only on those sites that have potential to be impacted by the Proposed Action. ERP sites that require no further action; do not directly coincide with facilities proposed for construction, demolition, or renovation; or would not be impacted by the proposed work activities are not evaluated further. None of Fairchild AFB's MMRP sites coincide with areas associated with the Proposed Action. The three ERP sites potentially affected by the Proposed Action are described below.

ERP Site SS-26. This ERP site is located along Taxiway 1 and immediately adjacent to Building 1017. Contamination associated with this site includes benzene in groundwater attributed to leaking jet fuel distribution lines. The strategy for ERP Site SS-26 is currently long-term monitoring (Fairchild AFB 2018c, Fairchild AFB 2015a).

ERP Site SS-39. This ERP site consists of trichloroethylene- and carbon tetrachloride-contaminated groundwater plumes that extend across the installation over an area approximately 3 miles long and a third of a mile wide. Buildings 1, 2048, and 2050 might be within the footprint of a plume. ERP Site SS-39 is currently undergoing remedial action in accordance with the 2011 interim record of decision.

ERP Site TU-504. This ERP site consists of soil contamination resulting from leaks at the fuel storage tanks. The first 12 feet of surface soils have been remediated to industrial standards,

but further investigation is necessary should any proposed excavation extend beyond 12 feet in depth (Fairchild AFB 2018c).

USAF has initiated a study of historical firefighting foam releases and the potential for chemicals contained in firefighting foam to have contaminated groundwater. Perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) are two such chemicals and both were detected in USAF monitoring wells along the southeastern and north perimeter of the installation at levels above the USEPA health advisory level of 70 parts per trillion. Contaminated soil and groundwater have been identified near the installation's fire station, which is located immediately upgradient of Building 1 and the proposed base and squadron operations facility. PFOA and PFOS has also been detected above the health advisory levels in nearby off-base residential wells and a City of Airway Heights municipal well. USAF is performing additional sampling and investigation. PFOA and PFOS are unregulated compounds and have low potential for vapor intrusion (Fairchild AFB 2018c).

Radon. USEPA rates Spokane County, Washington, as radon zone 1. Counties in zone 1 have a predicted average indoor radon screening level greater than 4 pCi/L (USEPA 2018c).

3.5.2.2 MACDILL AFB

Hazardous Materials, Petroleum Products, and Hazardous Wastes. MacDill AFB uses hazardous materials and petroleum products such as liquid fuels, pesticides, and solvents for everyday operations. The use of these hazardous materials and petroleum products results in the generation and storage of hazardous wastes and used petroleum products on the installation. MacDill AFB is a RCRA Large Quantity Generator with facility identification number FL6570024582. Within the areas of the MacDill AFB Alternative, hazardous materials, hazardous wastes, and petroleum products are used and generated only at Hangar 2 (MacDill AFB 2011b).

MacDill AFB has implemented installation-specific hazardous materials and hazardous waste management plans. These plans define roles and responsibilities, addresses record keeping requirements, and provides spill contingency and response requirements (MacDill AFB 2017e, MacDill AFB 2011b). MacDill AFB also maintains a Spill Prevention Control and Countermeasures Plan (MacDill AFB 2012b), which identifies specific procedures and responsibilities for responding to a spill.

Special Hazards. ACMs on MacDill AFB are managed in accordance with the installation's asbestos management and operations plan (MacDill AFB 2011c). ACMs are generally maintained in place until the building is renovated or demolished. Hangar 2 and Buildings 55, 303, and 378 are likely to contain ACMs (MacDill AFB 2018a). The other buildings associated with the MacDill AFB Alternative might also contain ACMs.

The installation's LBP management plan provides guidance on how to protect USAF personnel and the public from exposure to and the management and disposal of LBP (MacDill AFB 2007). Hangar 2 and Buildings 55, 303, and 378 are likely to contain LBP (MacDill AFB 2018a). The other buildings associated with the MacDill AFB Alternative might also contain LBP.

Hangar 2 and Buildings 55, 303, and 378 were constructed prior to 1979 and, therefore, have the greatest potential to contain PCBs in building material (MacDill AFB 2018a). Older electrical infrastructure, such as light fixtures and surge protectors, within these buildings might also contain PCBs.

Environmental Contamination. As of July 2017, there are 25 active ERP and 4 active MMRP sites on MacDill AFB (MacDill AFB 2017a). This EA focuses only on those sites that have potential to be impacted by the MacDill AFB Alternative. ERP sites that require no further action; do not directly coincide with facilities proposed for construction, demolition, or renovation; or would not be impacted by the proposed work activities are not evaluated further. None of MacDill AFB's MMRP sites coincide with areas associated with the MacDill AFB Alternative. The three ERP sites potentially affected by the MacDill AFB Alternative are described below.

Site 57, Former Pumphouse 76 and Fuel Pits 5-12. This ERP site is located on the north side of the North Ramp and coincides with the location of the proposed fuel cell hangar. Contamination associated with this site includes benzene in groundwater attributed to leaks from former aircraft fueling infrastructure. Contaminated soil has been removed from the site, and in situ groundwater treatment has been accomplished. Land use controls prohibit residential uses on the site because soil remediation is to industrial standards, and long-term groundwater monitoring is in place to verify the plume will dissipate (MacDill AFB 2018b).

Solid Waste Management Unit 61. This ERP site consists of a large chlorinated solvent plume that extends from the flightline to Hillsborough Bay. The plume coincides with portions of the North Ramp. In situ groundwater treatment has been accomplished, and land use controls prohibit use of groundwater from within the site. Long-term groundwater monitoring is in place to verify the plume will dissipate (MacDill AFB 2018b).

Solid Waste Management Unit 76. This ERP site is located within the Aircraft Hangar Complex and includes the proposed squadron operations facility; proposed warehouse facility; Hangar 2; Buildings 44, 55, and 56; and portions of the North Ramp. Soil and groundwater contamination resulting from past aircraft maintenance activities have been identified on the site. Some contaminated soils (i.e., those above industrial standards) have been removed from the site, and in situ groundwater treatment has been accomplished. Land use controls prohibit residential uses on the site, and long-term groundwater monitoring is in place to verify the plume will dissipate (MacDill AFB 2018b).

Radon. USEPA rates Hillsborough County, Florida, as radon zone 2. Counties in zone 2 have a predicted average indoor radon screening level between 2 and 4 pCi/L (USEPA 2018c).

3.5.3 Environmental Consequences

Impacts on or from hazardous materials and wastes would be considered significant if a proposed action would result in noncompliance with applicable federal or state regulations, or increase the amounts generated or procured beyond current management procedures, permits, and capacities. Impacts on contaminated sites would be considered significant if a proposed action would disturb or create contaminated sites resulting in negative impacts on human health

or the environment, or if a proposed action would make it substantially more difficult or costly to remediate existing contaminated sites.

3.5.3.1 PROPOSED ACTION

Hazardous Materials, Hazardous Wastes, and Petroleum Products. Short-term, minor, adverse impacts would occur from the use of hazardous materials and petroleum products and the generation of hazardous wastes during the proposed facility construction, demolition, and renovation. Hazardous materials that could be used include paints, welding gases, solvents, preservatives, and sealants. Additionally, hydraulic fluids and petroleum products, such as diesel and gasoline, would be used in the vehicles and equipment supporting facility construction. Construction would generate negligible to minor quantities of hazardous wastes. Contractors would be responsible for the disposal of hazardous wastes in accordance with federal and state laws. All hazardous materials, petroleum products, and hazardous wastes used or generated during construction would be contained, stored, and managed appropriately (e.g., secondary containment, inspections, spill kits) in accordance with applicable regulations to minimize the potential for releases. Contractors could be required to develop and implement their own Spill Prevention Control and Countermeasure Plans. All construction equipment would be maintained according to the manufacturer's specifications and drip mats would be placed under parked equipment as needed. Hazardous materials, hazardous wastes, and petroleum products currently within the affected portions of Buildings 2007, 2045, and 2050 would be relocated to similar facilities to accommodate building renovation.

Long-term, minor, adverse impacts would occur from increases in use of hazardous materials and petroleum products and hazardous wastes generation following the proposed addition of 12 KC-135s to Fairchild AFB. Additional quantities of hazardous materials, hazardous wastes, and petroleum products, most notably jet fuel, would be delivered, stored, used, and disposed of appropriately at Fairchild AFB for operation and maintenance of the additional aircraft. The quantities of hazardous materials, petroleum products, and hazardous wastes required for operation and maintenance of these additional aircraft would be similar and proportional to those for the installation's existing KC-135s. New hazardous materials storage and hazardous waste collection points would be established, as necessary, and most likely would be sited in Buildings 1007, 2045, and 2050 based on anticipated building function. Fairchild AFB's hazardous materials and hazardous waste management plans would be amended, as needed, for any new hazardous material, hazardous waste, or petroleum product capabilities. These plans would continue to be followed to lessen the potential for a release. Fairchild AFB is anticipated to have sufficient delivery, storage, and disposal capacity to accommodate the increased hazardous materials, petroleum products, and hazardous wastes requirements from the additional aircraft.

Special Hazards. Short-term, minor, adverse impacts from special hazards might occur from the proposed demolition and renovation of buildings potentially containing special hazards including ACMs, LBP, and PCBs that could be disturbed. Surveys for special hazards would be completed, as necessary, by a certified contractor prior to work activities to ensure that appropriate measures are taken to reduce potential exposure to, and release of, these special hazards. Contractors would wear appropriate personal protective equipment and would be required to adhere to all federal, state, and local regulations as well as the installation's

management plans for these special hazards. All ACM- and LBP-contaminated debris would be disposed of at an USEPA-approved landfill. New building construction would not include the use of these special hazards because federal policies and laws limit their use in building construction applications. Long-term, negligible, beneficial impacts through demolition would occur from reducing the potential for future human exposure to special hazards and reducing the amount ACMs, LBP, and PCBs to maintain at Fairchild AFB.

Environmental Contamination. Short-term, minor, adverse impacts would occur because some facility construction, demolition, and renovation would coincide with active ERP sites. The proposed construction of the base and squadron operation facility, demolition of Building 1 and associated parking lots, addition onto Building 2048, pavement replacement outside of Building 1017, and fuel line replacement have the greatest potential for conflicts with active ERP sites because work activities would involve ground disturbance within an active ERP site. Prior to the start of any construction or demolition, USAF would coordinate with the Fairchild AFB ERP office to ensure that ground disturbance is coordinated with ongoing remediation and investigation activities. The ERP office would ensure necessary consultation and coordination is completed with the USEPA and Washington State Department of Ecology, as required. ERP Sites SS-26 and SS-39 consist of groundwater contamination; therefore, contractors would take appropriate groundwater control measures should ground disturbance reach the depth of groundwater. The proposed facility projects would not impair the ability to monitor these sites. ERP Site TU-504 consists of soil contamination within the footprint of the proposed fuel line replacement. The first 12 feet of surface soils have been remediated to industrial standards and further investigation and appropriate corresponding remediation would be completed should the anticipated depth of excavation for the proposed fuel line reach 12 feet below ground surface (bgs). Proper handling and disposition of contaminated soils would be followed during construction on ERP Site TU-504.

USAF continues to sample for and investigate PFOA and PFOS in accordance with regulatory health advisories. Construction of the proposed base and squadron operational facility and demolition of Building 1 and associated parking lots is likely to coincide with soil and groundwater contamination resulting from historic PFOA and PFOS releases. PFOA and PFOS have low potential for vapor intrusion. Construction within the footprint of PFOA and PFOS soil contamination would be subject to environmental requirements for the handling and disposition of the soil. This construction would be coordinated with the Fairchild AFB ERP office, who would in turn ensure necessary environmental regulatory consultation and coordination occurs.

Contractors performing construction and demolition could encounter undocumented soil or groundwater contamination. If soil or groundwater that is believed to be contaminated was discovered, the contractor would be required to immediately stop work, report the discovery to the installation, and implement appropriate safety measures. Commencement of field activities would not continue in this area until the issue was investigated and resolved.

Radon. Long-term, minor, adverse impacts from radon are possible. Based on the USEPA rating of radon zone 1 for Spokane County, it is possible the new and renovated facilities could have indoor radon screening levels greater than 4 pCi/L. Although basements and poorly ventilated areas are most commonly affected by radon, any indoor space in contact with the

ground (i.e., first floor of a slab building) is at risk. Radon could be managed in new construction by incorporating passive features into the design that limit the ability for radon to enter the building. These features could include placing aggregate material and matting below the concrete floor to encourage lateral, rather than vertical, flow of soil gas; designing the heating, ventilation, and air condition system to avoid depressurization of the first floor; and using airtight seals around pipes and wires where they protrude from below grade. Periodic radon testing would occur as needed in each new and renovated building. Post-construction radon management measures, such as installing ventilation systems to remove radon that has already entered the building, would be installed in buildings that test higher than 4 pCi/L.

3.5.3.2 MACDILL AFB ALTERNATIVE

Hazardous Materials, Hazardous Wastes, and Petroleum Products. Short-term, minor, adverse impacts would occur from the use of hazardous materials and petroleum products and the generation of hazardous wastes during the proposed facility construction, demolition, and renovation. Hazardous materials that could be used include paints, welding gases, solvents, preservatives, and sealants. Additionally, hydraulic fluids and petroleum products, such as diesel and gasoline, would be used in the vehicles and equipment supporting facility construction. Construction would generate negligible to minor quantities of hazardous wastes. Contractors would be responsible for the disposal of hazardous wastes in accordance with federal and state laws. All hazardous materials, petroleum products, and hazardous wastes used or generated during construction would be contained, stored, and managed appropriately (e.g., secondary containment, inspections, spill kits) in accordance with applicable regulations to minimize the potential for releases. Contractors could be required to develop and implement their own Spill Prevention Control and Countermeasure Plans. All construction equipment would be maintained according to the manufacturer's specifications and drip mats would be placed under parked equipment as needed. Hazardous materials, hazardous wastes, and petroleum products currently within the affected portions of Hangar 2 would be relocated to similar facilities to accommodate building renovation.

Long-term, minor, adverse impacts would occur from increases in use of hazardous materials and petroleum products and hazardous wastes generation following the proposed addition of 12 KC-135s to MacDill AFB. Additional quantities of hazardous materials, hazardous wastes, and petroleum products, most notably jet fuel, would be delivered, stored, used, and disposed of appropriately at MacDill AFB for operation and maintenance of the additional aircraft. The quantities of hazardous materials, petroleum products, and hazardous wastes required for operation and maintenance of these additional aircraft would be similar and proportional to those for the installation's existing KC-135s. New hazardous materials storage and hazardous waste collection points would be established, as necessary, and most likely would be sited in Hangar 2, the proposed fuel cell hangar, and the proposed warehouse facility based on anticipated building function. MacDill AFB's hazardous materials and hazardous waste management plans and Spill Prevention Control and Countermeasures Plan would be amended, as needed, for any new hazardous material, hazardous waste, or petroleum product capabilities. These plans would continue to be followed to lessen the potential for a release and provide spill contingency and response requirements. MacDill AFB is anticipated to have sufficient delivery, storage, and disposal capacity to accommodate the increased hazardous materials, petroleum products, and hazardous wastes requirements from the additional aircraft.

Special Hazards. Short-term, minor, adverse impacts from special hazards might occur from the proposed demolition and renovation of buildings potentially containing special hazards including ACMs, LBP, and PCBs that could be disturbed. Surveys for special hazards would be completed, as necessary, by a certified contractor prior to work activities to ensure that appropriate measures are taken to reduce potential exposure to, and release of, these special hazards. Contractors would wear appropriate personal protective equipment and would be required to adhere to all federal, state, and local regulations as well as the installation's management plans for these special hazards. All ACM- and LBP-contaminated debris would be disposed of at an USEPA-approved landfill. New building construction would not include the use of these special hazards because federal policies and laws limit their use in building construction applications. Long-term, negligible, beneficial impacts through demolition would occur from reducing the potential for future human exposure to special hazards and reducing the amount ACMs, LBP, and PCBs to maintain at MacDill AFB.

Environmental Contamination. Short-term, minor, adverse impacts would occur because some facility construction, demolition, and renovation would coincide with active ERP sites. The proposed construction of the fuel cell hangar, warehouse facility, and squadron operations facility; demolition of Building 44; and renovation of the North Ramp have the greatest potential for conflicts with active ERP sites because work activities would involve ground disturbance within an active ERP site. Prior to the start of any construction or demolition, USAF would coordinate with the MacDill AFB ERP office to ensure that ground disturbance is coordinated with ongoing remediation and investigation activities. The ERP office would ensure necessary environmental regulatory consultation and coordination action is completed, as required. Site 57 and Solid Waste Management Units 61 and 76 consist of groundwater contamination beneath several facilities; therefore, contractors would take appropriate groundwater control measures should ground disturbance reach the depth of groundwater. The proposed facility projects would not impair the ability to monitor these sites. Site 57 and Solid Waste Management Unit 76 also contain areas where soil contamination above residential limits remains. The MacDill AFB ERP office would identify these areas to contractors so that appropriate safety precautions could be taken for workers during construction. The land use controls (e.g., prohibitions on residential development and groundwater use) at these ERP sites would not conflict with the proposed facility projects; however, handling and disposition requirements would apply to disturbances of contaminated soils.

Contractors performing construction and demolition could encounter undocumented soil or groundwater contamination. If soil or groundwater that is believed to be contaminated was discovered, the contractor would be required to immediately stop work, report the discovery to the installation, and implement appropriate safety measures. Commencement of field activities would not continue in this area until the issue was investigated and resolved.

Radon. Long-term, negligible, adverse impacts from radon are possible but unlikely. There is only a minimal potential for elevated indoor radon levels in Hillsborough County; therefore, it is unlikely the new and renovated buildings would have indoor radon screening levels greater than 4 pCi/L. Additionally, the Florida Department of Health states that radon controls are generally unnecessary for new construction within the portion of Hillsborough County containing MacDill AFB (Florida DOH Undated).

3.5.3.3 NO ACTION ALTERNATIVE

Under the No Action Alternative, neither the Proposed Action nor the MacDill AFB Alternative would be implemented and hazardous materials and wastes conditions would remain as described in **Sections 3.5.2.1** and **3.5.2.2**. No impacts would occur. Special hazards currently found in the buildings proposed for demolition and renovation would remain intact and continue to require maintenance by USAF personnel.

3.6 Infrastructure and Transportation

3.6.1 Definition of the Resource

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly man-made with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as "urban" or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to the economic growth of an area. The infrastructure components discussed in this section include utilities, solid waste management, and the transportation system. Utilities include electrical supply, water supply, sanitary sewer system, natural gas supply, liquid fuel supply, stormwater drainage system, and communications system. Solid waste management primarily relates to the availability of landfills to support a population's solid waste needs. The transportation system addresses the capacity of roads, parking areas, and installation access gates to support vehicular movements.

3.6.2 Affected Environment

3.6.2.1 FAIRCHILD AFB

Electrical Supply. Electrical power at Fairchild AFB is provided via the Bonneville Power Administration through Avista Utilities from two on-installation 115-kilovolt (kV) substations (North and South). Both substations have three feeder circuits each distributing power at 13.2 kV. The electrical system consists of the two substations, power lines (underground and overhead), high-voltage switches, junction boxes, and transformers. Annual maintenance on the North and South substation infrastructure is performed by Bonneville Power Administration (Fairchild AFB 2012a).

The estimated maximum peak electrical loading for Fairchild AFB is 10.8 megawatts (MW) with 3.78 MW of headroom. The average electrical demand is 65 percent of the peak load. In 2010, AMC determined that the electrical system at Fairchild AFB was adequate (Fairchild AFB 2014a). Electrical system infrastructure is present within the areas of the Proposed Action.

Water Supply. Potable water is provided to Fairchild AFB by the Fort George Wright Annex well complex, which is northeast of Spokane International Airport. Five pumps at the well complex have a total capacity of 4,420 gallons per minute or 6.4 million gallons per day (mgd). The wells at the complex draw groundwater from both the Spokane Valley-Rathdrum Prairie Aquifer and the Latah (Hangman) Creek Aquifer and feed the Geiger Reservoir from which water is then piped to storage tanks at the installation. The installation has a total water storage capacity of 2.16 million gallons (Fairchild AFB 2014a, Fairchild AFB 2011).

The Fairchild AFB water supply system, including storage capacity, provides an adequate supply of potable water to meet duration, flow rate, and pressure requirements for industrial and domestic consumption and fire protection. If water demand is not met by the well complex, two backup groundwater sources for potable water supply (i.e., Well 2 and an intertie with the City of Spokane) could supply an additional 4.6 mgd of potable water (Well 2 provides 1 mgd and the intertie provides 3.6 mgd), for a total of 11 mgd of available capacity to the installation. As of 2012, the average water demand at the installation was 1.73 mgd with a peak water demand of 4.82 mgd (Fairchild AFB 2014a). Potable water infrastructure is present within the areas of the Proposed Action.

Sanitary Sewer System. The sanitary sewer system at Fairchild AFB consists of lateral lines from buildings, lift stations, 605 sewer manholes, and 284,190 linear feet of sewer collection mains. The Spokane Wastewater Management Department treats most of the wastewater from the installation at the Riverside Park Water Reclamation Facility. The only exceptions are three mounded drain field systems that Fairchild AFB operates and maintains on the south side of the installation. The Riverside Park Water Reclamation Facility is located on the east bank of the Spokane River and currently processes approximately 29 to 30 mgd of sewage, which is approximately 68.2 percent of the 44 mgd capacity (Fairchild AFB 2014a).

The maximum wastewater discharge capacity of the installation's sanitary sewer system is 1.8 mgd. In 2012, daily discharges from the installation averaged 0.68 mgd and peaked in March and April at 1.25 mgd. The average daily discharge was 39 percent of the installation system capacity and 70 percent of the capacity at peak daily discharge. The overall condition of the sanitary sewer system is considered adequate for current mission requirements; however, recent surveys of the system have identified several inflow and infiltration issues that require attention (Fairchild AFB 2014a). Sanitary sewer infrastructure is present within the areas of the Proposed Action.

Natural Gas Supply. The natural gas system at Fairchild AFB consists of gas lines (steel and polyethylene piping), valves, vents, and meters. The steel pipes generally date from 1960, while the polyethylene pipes are less than 10 years old. The steel gas lines are protected from corrosion by a cathodic protection system. The main meter for natural gas is located at Graham Gate. Two contractors, Honeywell and Avista Utilities, currently own the natural gas system pipelines on the installation (Fairchild AFB 2014a). Natural gas infrastructure is present within the areas of the Proposed Action.

Liquid Fuel Supply. The liquid fuel storage system at Fairchild AFB consists of a filtration house, bulk storage farm with three tanks, transfer system, and three hydrant-refueling systems with operating storage tanks, ground products storage system, and two Government-owned vehicle service stations. Liquid fuel is received by the installation from both commercial pipeline and tank trucks. Fairchild AFB has a liquid fuel capacity of approximately 4.6 million gallons with 1.8 million gallons of storage demand, resulting in an available capacity of 61 percent. The distribution system can receive approximately 480,000 gallons per day (gpd) with an average demand of 360,000 gpd. In 2010, AMC determined that the fuel systems at Fairchild AFB were adequate (Fairchild AFB 2014a). Liquid fuel infrastructure is present within the areas of the Proposed Action.

Stormwater Drainage System. The stormwater drainage system at Fairchild AFB consists of stormwater collection catch basins, drywells, collection piping, lagoons, ditches, and other stormwater conveyances. The installation's system is divided into eight stormwater basins with Drainage Basin 1 being the largest. All of the proposed facility construction, demolition, and renovation would occur within Drainage Basin 1. Drainage Basin 1 flows in a northwest-to-southeast direction via storm sewer, open storm conveyances, and sheet flow into a series of ponds before discharging off installation. Industrial activities occurring within Drainage Basin 1 include aircraft maintenance, washing, and refueling; vehicle maintenance, washing, and refueling; outdoor equipment and vehicle storage; bulk fuel storage; personal vehicle maintenance and washing; and aircraft de-icing and anti-icing activities. The existing stormwater conveyance system covers the central part of the installation and flightline areas. The southern portion of the installation has a stormwater conveyance system serving the Survival, Evasion, Resistance, and Escape School Campus. The remainder of the developed area allows sheet flow into open drainage ditches. Perched groundwater is present in many areas of the installation and localized flooding/ponding may occur, especially in the spring (Fairchild AFB 2014a).

Fairchild AFB operates under the USEPA National Pollutant Discharge Elimination System (NPDES) Stormwater Multi-Sector General Permit (MSGP) and a required SWPPP. The stormwater drainage system is managed in accordance with the installation's SWPPP (Fairchild AFB 2014a). Details about the installation's NPDES Stormwater MSGP are provided in **Section 3.12.2.1**. This permit does not authorize stormwater discharges associated with construction activities; therefore, a separate Notice of Intent for a NPDES Construction General Permit and SWPPP must be filed for all new construction activities that disturb 1 or more acres. Stormwater infrastructure is present within the areas of the Proposed Action.

Communications System. The communications system at Fairchild AFB is capable of supporting voice, data, video, wireless, land mobile radio, aircraft communications, and security systems. Backbone communications components and technology currently used are mostly copper and dated. As facilities are modernized, renovated, or constructed, new fiber communications are included in this process. The system includes a manhole/duct system, which is used to distribute copper and fiber cable throughout the installation. In remote areas of the installation, the fiber and copper cables are direct buried and do not use this system. The installation's telephone system utilizes multiple switches to handle a variety of installation telephone requirements. The three main switches are located at Buildings 1304, 2248, and 9000. These switches are connected via a Synchronous Optical Network backbone (Fairchild AFB 2014a). Communications infrastructure is present within the areas of the Proposed Action.

Solid Waste Management. Solid waste at Fairchild AFB is managed via an Integrated Solid Waste Management Plan (ISWMP) in accordance with AFI 32-7042, *Waste Management*. The Solid Waste Management and Recycling Program includes off-installation solid waste disposal and a full-service recycling center on the installation. A contractor, Quality Support Services, manages the recycling center at Building 2420. Under agreement with the City of Spokane and Spokane County, all municipal solid waste is disposed of at the Spokane Regional Waste-to-Energy Facility. Solid waste collection is completed by a contractor, Sunshine Disposal and Recycling. Construction and demolition (C&D) debris at the installation is recycled to the

greatest extent possible with the remainder disposed of at the Graham Road Recycling and Disposal Center, which has a remaining permitted capacity of approximately 13,053,000 tons (Fairchild AFB 2014a, Waste Management 2016).

Transportation System. There are 9.8 million ft^2 of roadway surfaces on Fairchild AFB. The roads on the installation are adequate and meet current mission needs. The primary arterial roads moving traffic onto and off the installation are Mitchell Drive and Rambo Road, which connect with Bong Street, Arnold Street, Fairchild Street, and Eaker Avenue. All other roads on the installation feed into these primary roads. The main secondary roads include Strategic Air Command Boulevard, West Castle Street, and O'Malley Avenue. Arnold Street provides immediate access to the flightline at Fairchild AFB. The 2008 Transportation Plan for the installation provides specific recommendations and plans for future road and parking improvements based upon known problem areas and future facilities. Some of the recommended projects from the plan have already been constructed (Fairchild AFB 2014a).

Regional access to Fairchild AFB is provided by Interstate (I)-90, U.S. Highway 2 (U.S. 2), and Washington State Highway 902. Vehicle access to the installation is provided through three primary gates: Main Gate, Rambo Gate, and Thorpe Gate. The Main Gate is located off U.S. 2 and is open 24 hours a day. Rambo Gate, which is on the east side of the installation on South Rambo Road, is for commercial vehicles and DoD badge holders and is open from 6 a.m. to 8 a.m. (inbound only) and 4 p.m. to 6 p.m. (outbound only) Monday through Friday. Thorpe Gate is in the southeastern part of the installation and serves personnel working in the southern portion of the installation, as well as personnel living in off-installation communities, such as the cities of Cheney and Medical Lake. Thorpe Gate is open 6 a.m. to 8 a.m. (inbound only) and 4 p.m. to 6 p.m. (outbound only) Monday through Friday for DoD badge holders. Assuming a worst-case scenario processing rate of 134 vehicles per lane per hour, the existing five lanes across the three gates providing access to the installation operate at capacity (668 vehicles) and at times operate over capacity during peak hours. McFarland Gate and Graham Gate are located on the west side of the installation, but are only used as contingency gates (Fairchild AFB 2014a).

3.6.2.2 MACDILL AFB

Electrical Supply. Electrical power at MacDill AFB is provided by Tampa Electric Company (TECO), which provides two 35.2 MW feeders to the substation on the installation. The substation has five feeders that supply 13.2 kV power throughout the installation. The installation uses 26 MW, leaving a remaining capacity of 9.2 MW. TECO is constructing the Interbay Substation north of MacDill AFB, which will provide an additional 35.2 MW, doubling current capacity and solving any redundancy issues. Construction of the substation began in July 2017 and is scheduled to be complete by summer 2018 (TECO 2018). The installation is continually implementing energy conservation projects to meet the federal requirement for reduced energy consumption (MacDill AFB 2017a).

Electricity is distributed via both underground and overhead lines throughout the installation. The administrative, flightline, and housing areas are served by primary and secondary underground lines, while the southern airfield and petroleum, oil, and lubricant (POL) farm areas receive electricity via overhead lines. The electrical distribution system has been updated and

is in excellent condition (MacDill AFB 2017a). Electrical system infrastructure is located within the areas of the MacDill AFB Alternative.

Water Supply. The potable water distribution system at MacDill AFB is privately owned and operated by the Florida Government Utility Authority (FGUA), which obtains water from the City of Tampa. Water quality is very good and the installation operates three chlorine booster stations that can treat domestic water when needed. There are three potable water tie-ins to receive water at the installation boundary and two water towers for potable water storage on the installation. The north tower, located in the main cantonment area, holds 500,000 gallons and the south tower, located in the accompanied housing area, holds 250,000 gallons, resulting in a total storage capacity of 750,000 gallons on the installation (MacDill AFB 2017a).

The water distribution system, which includes potable water and fire protection, consists of 227,000 linear feet of piping, most of which is 50 to 60 years old. It is a mixture of steel, cast iron, polyvinyl chloride, and high-density polyethylene pipe. The installation has been implementing improvement projects to replace the original cast iron pipes. Additional improvement projects are underway with more planned in the future. Despite being improved in recent years, the water distribution system is still considered degraded (MacDill AFB 2017a).

The capacity of the water distribution system at MacDill AFB is 3.6 mgd. Average demand on the installation is 1.05 mgd and peak demand is 3.31 mgd. During average and peak demand requirements, the installation has adequate water supply (MacDill AFB 2017a). Potable water infrastructure is located within the areas of the MacDill AFB Alternative.

Sanitary Sewer System. The water discharge and sewer collection systems at MacDill AFB are privately owned and operated by FGUA. The wastewater treatment plant (WWTP) on the installation has a capacity of 1.2 mgd, which is sufficient to handle the average demand of 400,000 gpd. Effluent from the WWTP is pumped into a holding pond with a capacity of 4 million gallons. From the holding pond, the treated water is pumped to the north and south golf courses for irrigation and to an irrigation field. The wastewater discharge and sewer collection systems are in good condition and consist of more than 62,000 linear feet of piping, 60 lift stations, and the WWTP. Approximately 12,000 linear feet of piping and 60 manholes have been recently replaced with more improvements planned for the future (MacDill AFB 2017a). Sanitary sewer infrastructure is located within the areas of the MacDill AFB Alternative.

Natural Gas Supply. Natural gas on MacDill is provided by Peoples Gas Company of Tampa, and the installation's natural gas distribution system is owned and operated by USAF. Natural gas on the installation is used for heating facilities and water. The natural gas distribution system is in good condition and consists of 10 percent steel pipe and 90 percent high-density polyethylene pipe. It includes more than 43,000 linear feet of piping throughout the installation with an additional 16,523 linear feet in the housing areas. Due to the mild temperatures at MacDill AFB, natural gas demand is low. The distribution system has a capacity of 15,740,000 cubic feet per month with a monthly demand of 2,884,000 cubic feet (MacDill AFB 2017a). Natural gas infrastructure is located within the areas of the MacDill AFB Alternative.

Liquid Fuel Supply. MacDill AFB receives, stores, and delivers liquid fuel by pipeline and commercial tanker truck, although pipeline delivery accounts for 98 percent of fuel delivery on

the installation. The Defense Fuel Supply Point consists of three aboveground storage tanks (ASTs) with a total capacity of 6.9 million gallons and the POL system consists of two ASTs and the Type III hydrant system. The POL system ASTs provide 2.4 million gallons of fuel to the Type III system, which is pressurized and services 12 hydrant pits. An additional three pits are planned for the future. Overall, the installation is operating at 48 percent capacity of the POL fuel storage and Type III hydrant system. It is estimated that approximately 17 million gallons of fuel will be used in FY 2018, or 1.4 million gallons fuel per month. The Defense Fuel Supply Point storage facilities were constructed in 1952 on the western side of the installation. The ASTs were refurbished in 1985 and are in good condition. The two POL ASTs were constructed in 2004 and are in great condition. The Type III hydrant system is also in good condition (MacDill AFB 2017a).

Stormwater Drainage System. All stormwater runoff from MacDill AFB is treated on the installation prior to discharge. The stormwater drainage system at MacDill AFB consists of drainage ditches, culverts, and storage ponds that connect to tidal creeks and canals or directly into Tampa Bay and Hillsborough Bay. The system includes 24.4 miles of culverts and 56.3 miles of open ditches and canals with five drainage basins. The stormwater discharge and collection system has been updated over the years; however, some areas remain outdated. Stormwater management is a major consideration and design element for all new development at MacDill AFB, and the overall system improves as new development occurs and additional stormwater management improvements are made (MacDill AFB 2017a).

The stormwater drainage system on the installation is permitted as an FDEP Phase II municipal separate storm sewer system (MS4). The MS4 receives both nonindustrial and industrial stormwater runoff. NPDES regulations require the installation to obtain authorization from FDEP for discharges of stormwater to any surface water (ditches, canals, ponds) and waters of the United States (Hillsborough Bay and Tampa Bay). MacDill AFB has two NPDES permits, including a MSGP for stormwater discharge associated with industrial activities and a general permit for stormwater discharges from Phase II MS4 (MacDill AFB 2011d). Details about the installation's stormwater permits are provided in **Section 3.12.2.2**. Additionally, projects that disturb over 1 acre (or that contribute stormwater discharges to surface waters of the State of Florida or a MS4) must apply for a NPDES General Permit for Stormwater Discharge from Large and Small Construction Activities. Stormwater infrastructure is present within the areas of the MacDill AFB Alternative.

Communications System. Communications infrastructure at MacDill AFB consists of underground copper cable (15 percent) and fiber optic cable (85 percent). The communications system includes one core router and seven support routers that serve 250 buildings on the installation. The system is robust with only 12 percent of the system being utilized. The communications infrastructure is in good condition and upgraded every 5 years (MacDill AFB 2017a).

Solid Waste Management. In accordance with AFI 32-7042, municipal solid waste at MacDill AFB is managed via an ISWMP. As part of the ISWMP, the installation maintains a recycling program to manage recyclable materials. Under the recycling program, the installation collects cardboard, glass, scrap metal, aluminum cans, steel cans, plastic bottles, newspapers, office

paper, universal waste, waste jet fuel, used oil, and used oil filters. Sea Coast Disposal, a contractor, is responsible for collection, transportation, and disposal of solid waste and recyclable materials. DLA Disposition Services at MacDill AFB accepts materials for reutilization, transfer, donation, or sale. They process recyclable materials including scrap metals, electronics, automotive tires, and aircraft tires; and government-procured items such as car batteries, furniture, appliances, computers, paints, lubricants, and antifreeze (MacDill AFB 2008b).

The installation generates approximately 5,500 tons of nonhazardous solid waste, including C&D debris. Approximately 44 percent of the nonhazardous waste and 59 percent of the C&D waste are diverted on average. Solid waste generated at the installation that is not diverted is typically disposed of at the McKay Bay Refuse-to-Energy Facility located off-installation in Tampa (MacDill AFB 2008b). This facility receives an average of more than 360,000 tons of waste annually. The McKay Bay Refuse-to-Energy Facility has a design capacity of 1,000 tons per day, although the operational capacity is 904 tons per day.

Management of C&D waste generated from contractor-performed construction, renovation, and maintenance projects on the installation is the responsibility of the contractor. Contractors are required to comply with federal, state, local, and USAF regulations for the collection and disposal of municipal solid waste.

Transportation System. There are approximately 8 million ft^2 of roadway surfaces throughout MacDill AFB. The roads on the installation are adequate and meet current mission needs. The on-installation transportation system consists of primary, secondary, and tertiary roadways that connect with the off-installation roadways through the four access gates. Primary roads include South Boundary Boulevard and Florida Keys Avenue, and portions of North Boundary Boulevard and Hillsborough Loop Drive. Secondary roads include Hangar Loop Drive, Marina Bay Drive, and Bayshore Boulevard as well as portions of North Boundary Boulevard and Hillsborough Loop Drive. The installation has implemented traffic control measures on most of the signaled intersections, which has alleviated most traffic congestion problems throughout the installation. With a daily population of just under 19,000, parking has remained a concern at many locations on the installation. Surface parking is provided in the areas of the MacDill AFB Alternative (MacDill AFB 2017a).

There are three general access gates for privately owned vehicles (POVs) and one commercial vehicle inspection (CVI) gate. The main gate, known as the Dale Mabry Gate, is located in the north-central portion of the installation and is fed by Dale Mabry Highway, the main north/south road to and from the installation from the north. The Dale Mabry Gate accounts for approximately 57 percent of the traffic accessing the installation. The two other POV gates are the Bayshore and MacDill gates. Bayshore Gate, fed by Bayshore Boulevard, is located on the northwestern corner of the installation. The MacDill Gate, fed by MacDill Avenue, is located between the Bayshore and Dale Mabry gates on the northern edge of the installation. The CVI gate is located at the western end of North Boundary Boulevard west of the Dal Mabry Gate and allows POV entry during the morning rush hour. These gates process 12,000 POVs per day (MacDill AFB 2017a).

3.6.3 Environmental Consequences

The analysis to determine whether impacts on infrastructure systems are significant primarily considers whether a proposed action would exceed capacity or place unreasonable demand on a specific utility. Impacts might arise from energy needs created by either direct or indirect workforce and population changes related to installation activities. It is assumed construction contractors would be informed on utility locations prior to any ground-disturbing activities that would result in unintended utility disruptions or human safety hazards. All construction would be conducted in accordance with federal and state safety guidelines. Any permits required for excavation and trenching would be obtained prior to the commencement of construction activities. Impacts on transportation systems would be considered significant if they significantly degrade the existing transportation infrastructure by creating unacceptable traffic on roadways, excessive delays at installation access gates, or shortfalls in parking.

3.6.3.1 PROPOSED ACTION

Electrical Supply. Short-term, negligible, adverse impacts on the electrical distribution system would occur during facility construction, demolition, and renovation. Electrical service interruptions could be experienced should aboveground or underground electrical lines need to be rerouted, when new or renovated facilities are connected to the installation's electrical distribution system, and when Building 1 is disconnected prior to demolition.

Long-term, negligible, adverse impacts on the electrical distribution system at Fairchild AFB would occur from a slight increase in electrical power usage from the increase in personnel and new and expanded facilities and additional infrastructure. To conservatively estimate the increased electrical use of the Proposed Action, the residential electrical use associated with personnel and dependents that would be permanently stationed at Fairchild AFB under the Proposed Action was calculated. The most recent available data from U.S. Energy Information Administration (USEIA) in 2016 identified that residential customers (i.e., households) used an average of approximately 11.5 megawatt hours (MWh) per household per year in the State of Washington (USEIA 2017a). Using that number as a residential planning factor, the additional 369 households at Fairchild AFB (one for each active duty military personnel including their dependents) would increase the state's annual demand for electricity by approximately 4,244 MWh per year. This would represent an increase of approximately 0.01 percent of total state usage in 2016.

Assuming the additional population resides on Fairchild AFB and the population uses electricity at the 2016 residential average rate of 0.03 MWh per household per day, the Proposed Action would increase the daily use of electricity at the installation by approximately 11.1 MWh per day. This would increase the average daily demand at the installation by approximately 6.6 percent and represents an end result of approximately 69 percent of the total capacity at Fairchild AFB.

Water Supply. Short-term, negligible, adverse impacts on the water supply system would occur during facility construction, demolition, and renovation as existing water lines are connected to new buildings or capped as appropriate. The water supply line for Building 2048 would be relocated to the northwest side of the building to accommodate the proposed flight simulator addition, which would be sited within the footprint of the building's existing water supply line.

Long-term, negligible, adverse impacts on the water supply system would occur from the population increase associated with the Proposed Action. According to the most recent USGS data, the per capita domestic water consumption for the State of Washington is 111 gpd (USGS 2014b). Based on the increase of 970 personnel and dependents at the installation, potable water usage would be expected to increase by approximately 107,700 gpd. Assuming that all new personnel and dependents reside on Fairchild AFB, the Proposed Action would increase the average daily demand at the installation from 1.73 mgd to 1.84 mgd, resulting in an increase of approximately 6.5 percent and remaining within available system capacity.

Sanitary Sewer System. Short-term, negligible, adverse impacts on the sanitary sewer system would occur during facility construction, demolition, and renovation as existing sanitary sewer lines are connected to new buildings or capped as appropriate.

Long-term, negligible, adverse impacts on the sanitary sewer system would occur from the population increase associated with the Proposed Action. USEPA estimates that the average person generates approximately 100 gpd of wastewater (USEPA 2005). Using this amount as a planning factor, along with the increase in installation population by 970 people, the Proposed Action would increase wastewater discharge at the installation by approximately 97,000 gpd (approximately 0.1 mgd). This is an approximate 8 percent increase in the peak average daily wastewater discharge, and would be able to be accommodated by the existing sanitary sewer system.

Natural Gas Supply. Short-term, negligible, adverse impacts on natural gas supply would occur during facility construction, demolition, and renovation as existing natural gas lines are connected to new buildings or capped as appropriate.

Long-term, negligible, adverse impacts on the natural gas supply system would occur from the increase in personnel and new and expanded facilities and additional infrastructure at Fairchild AFB associated with the Proposed Action. For natural gas consumption estimates, USEIA identified that approximately 1,153,183 residential consumers (i.e., households) in the State of Washington used approximately 76,321 million cubic feet of natural gas in 2016 (USEIA 2017b). This equates to an average of approximately 0.07 million cubic feet per household. Using that amount as a planning factor along with the change in population at Fairchild AFB anticipated from the Proposed Action (369 households), natural gas usage would increase the state's annual residential demand by 25.8 million cubic feet. This represents approximately 0.03 percent of the total statewide usage in 2016.

Liquid Fuel Supply. Long-term, negligible, adverse impacts on the liquid fuel supply system at Fairchild AFB would occur. The addition of 12 KC-135s would result in a 16.3 percent increase in annual aircraft operations at the installation and a corresponding increase in liquid fuel demand. Fairchild AFB currently has the capacity to receive 480,000 gpd and store 4.6 million gallons of jet fuel, and the installation is currently utilizing approximately 75 percent of supply capacity and 39 percent of storage capacity with its current mission. As such, the existing liquid fuel infrastructure can accommodate the proposed increase in aircraft operations. Long-term, beneficial impacts would result from the proposed fuel line replacement and upgrade of the fuel hydrant system within the areas of the Proposed Action.

Stormwater Drainage System. Short- and long-term, negligible, adverse impacts on the stormwater drainage system at Fairchild AFB would occur. The proposed facility construction, demolition, and renovation would take place within existing developed areas such as the installation flightline and cantonment area. The total disturbed area associated with these projects would not exceed 717,245 ft^2 and would result in an increase in impervious surfaces on the installation by 34,172 ft^2. All of the proposed facility construction, demolition, and renovation would occur in Drainage Basin 1.

During facility construction, demolition, and renovation, all contractors would be required to comply with applicable statutes, standards, regulations, and procedures regarding stormwater management. During the design phase, a variety of stormwater controls or BMPs would be incorporated into construction plans, which would include planting native vegetation in disturbed areas as soon as possible following construction activities; constructing retention facilities; and implementing structural controls such as interceptor dikes, swales (excavated depressions), silt fences, straw bales, and other storm drain inlet protection, as necessary, to prevent sedimentation in inlet structures.

Update of the Fairchild AFB SWPPP may be required and requirements of Energy Independence and Security Act (EISA) of 2007 would be followed to maintain or restore, to the maximum extent practicable, the predevelopment hydrology of the collective project sites with respect to rate, volume, and duration of flow. Use of BMPs and guidance for maintaining and restoring areas of development outlined in the Fairchild AFB SWPPP would be followed to minimize or avoid adverse impacts.

Communications System. Short- and long-term, negligible, adverse impacts on the communications system at Fairchild AFB would occur. Disruptions in communications service would be anticipated as new facilities are connected to the existing communications infrastructure and Building 1 is taken off the communications system prior to demolition. As discussed in **Section 3.6.2.1**, because components of the communications system on the installation are dated, as facilities are modernized, renovated, or constructed, they are upgraded with new fiber communications systems.

Solid Waste Management. Short- and long-term, negligible, adverse impacts on solid waste management at Fairchild AFB would occur from the increased solid waste generated during facility construction, demolition, and renovation and by the increased installation population. All solid waste, both municipal and C&D debris, generated during the Proposed Action would be collected and transported off-site for disposal or recycling. Contractors would be required to comply with federal, state, and local regulations for the collection and disposal of municipal solid waste from the installation. Much of the debris would be recycled, reused, or otherwise diverted from landfills to the extent practicable.

Contractors completing any facility construction, demolition, or renovation project would be responsible for disposing of waste generated from these activities. Using methodology developed by USEPA, the facility construction, demolition, and renovation supporting the Proposed Action would generate approximately 2,691 tons of C&D debris (USEPA 2009). Disposal of C&D debris would be through an integrated C&D debris diversion approach, which would include reuse, recycling, volume reduction/energy recovery, and similar diversion actions.

The Fairchild AFB ISWMP requires up to 50 percent of C&D debris be diverted and DoD has a goal of 60 percent diversion (Fairchild AFB 2014a). Applying the DoD diversion goal rate to the potential amount of C&D debris would result in approximately 1,615 tons of C&D debris diverted for reuse or recycling, and approximately 1,076 tons being placed in the Graham Road Recycling and Disposal Center landfill.

Transportation System. Short-term, negligible to minor, adverse impacts on the transportation system would occur during facility construction, demolition, and renovation. These activities would require the delivery of materials to and removal of C&D debris from the project sites. Trucks associated with these activities would access the installation via the Rambo Gate. Construction crews would access the installation via the Main Gate or the Rambo Gate. Construction-related traffic would result in a small increase to the current traffic volume and would be temporary in nature. Intermittent traffic delays and temporary road closures could occur in the immediate vicinity of the areas of the Proposed Action. However, potential impacts would be avoided or minimized by scheduling truck deliveries outside the peak inbound traffic times and by construction workers using the Rambo Gate to access the installation during peak hours. Additionally, heavy construction equipment would be driven to the work sites and kept on the installation for the duration of construction activities.

Long-term, negligible to minor, adverse impacts on the Fairchild AFB transportation system would occur. Depending on the number of the 370 new personnel that reside off the installation, congestion and queuing, primarily at the Main Gate and the Thorpe Gate, could increase during peak travel times. To avoid significant impacts, the installation could adjust the schedule of operations to accommodate the expected increase, upgrade entry gates, or provide additional personnel at the gates to process security checks during peak hours as required.

3.6.3.2 MACDILL AFB ALTERNATIVE

Electrical Supply. Short-term, negligible, adverse impacts on the electrical distribution system would occur during facility construction, demolition, and renovation. Electrical service interruptions could be experienced should aboveground or underground electrical lines need to be rerouted, when new or renovated facilities are connected to the installation's electrical distribution system, and when Building 44 is disconnected prior to demolition.

Long-term, negligible, adverse impacts on the electrical distribution system at Fairchild AFB would occur from the MacDill AFB Alternative. These impacts would result from a slight increase in electrical power usage from the increase in personnel and new and expanded facilities and additional infrastructure. To conservatively estimate the increased electrical use of the MacDill AFB Alternative, the residential electrical use associated with personnel and the dependents being permanently stationed at MacDill AFB was calculated using the most recent avilable data from USEIA that identified in 2016, residential customers (i.e., households) used an average of approximately 13.5 MWh per household per year in the State of Florida (USEIA 2017a). Using that number as a planning factor, the addition of 394 households at MacDill AFB (one for each active duty military personnel including their dependents) would increase the state's annual demand for electricity by approximately 5,319 MWh per year. This would represent an approximate increase of less than 0.01 percent of total state usage in 2016.

Assuming the change in population resides on MacDill AFB and the population uses electricity at the 2016 residential average rate of 0.04 MWh per household per day, the MacDill AFB Alternative would increase the daily use of electricity at the installation by approximately 15.8 MWh per day. This would increase the average daily demand at the installation by approximately 2.7 percent. As discussed in **Section 3.6.2.2**, TECO is constructing an additional substation north of the installation that will provide an additional 35.2 MW, doubling current capacity.

Water Supply. Short-term, negligible, adverse impacts on the water supply system occur during facility construction, demolition, and renovation as existing water lines are connected to new buildings or capped as appropriate.

Long-term, negligible, adverse impacts on the water supply system would occur from the population increase associated with the MacDill AFB Alternative. According to the most recent USGS data, the per capita domestic water consumption for the State of Florida is 87 gpd (USEPA 2005). Based on the increase of 1,035 personnel and dependents at the installation, potable water usage would be expected to increase by approximately 90,045 gpd. The MacDill AFB Alternative would increase the average daily demand at the installation from 1.05 mgd to 1.14 mgd, an increase of approximately 8.6 percent, which would remain within available system capacity.

Sanitary Sewer System. Short-term, negligible, adverse impacts on the sanitary sewer system would occur during facility construction, demolition, and renovation as existing sanitary sewer lines are connected to new buildings or capped as appropriate.

Long-term, negligible, adverse impacts on the sanitary sewer system would occur from the population increase associated with the MacDill AFB Alternative. USEPA estimates that the average person generates approximately 100 gpd of wastewater (USEPA 2005). Using this amount as a planning factor, along with the increase in installation population by 1,035, the MacDill AFB Alternative would increase wastewater discharge at the installation by approximately 103,500 (0.1 mgd). This represents an increase of approximately 26 percent in the average daily demand for a total demand of 503,500 gpd, but would be accommodated by the existing WWTP that has a capacity of 1.2 mgd.

Natural Gas Supply. Short-term, negligible, adverse impacts on natural gas supply would occur during facility construction, demolition, and renovation as existing natural gas lines are connected to new buildings or capped as appropriate.

Long-term, negligible, adverse impacts on the natural gas supply system would occur from the increase in personnel and new and expanded facilities and additional infrastructure at MacDill AFB. For natural gas consumption estimates, USEIA identified that approximately 731,744 residential consumers (i.e., households) in the State of Florida used approximately 15,352 million cubic feet of natural gas in 2016 (USEIA 2017b). This equates to an average of approximately 0.02 million cubic feet per household. Using that amount as a planning factor along with the change in population at the installation anticipated from the MacDill AFB Alternative (394 households), natural gas usage would increase the state's annual residential

demand by 7.9 million cubic feet. This represents approximately 0.05 percent of the total statewide usage in 2016.

Liquid Fuel Supply. Long-term, negligible, adverse and beneficial impacts on the liquid fuel supply system would occur. The addition of 12 KC-135s would result in a 29 percent increase in annual aircraft operations at the installation and a corresponding increase in liquid fuel demand. MacDill AFB currently operates at 48 percent capacity of the POL fuel storage and Type III hydrant system and can accommodate the increase in aircraft operations. Although the installation would have an adequate supply and storage of fuel for the increase in aircraft operations, the existing hydrant fuel system is not adequate to support the additional KC-135 aircraft. However, upgrade of the fuel hydrant system and addition of eight new hydrants would occur under this alternative. Therefore, the MacDill AFB Alternative would result in a long-term, beneficial impact on the liquid fuel system.

Stormwater Drainage System. Short- and long-term, negligible, adverse impacts on the stormwater drainage system would occur. The proposed facility construction, demolition, and renovation would occur within existing developed areas such as the installation flightline and cantonment area. The total disturbed area associated with these projects would not exceed 1,699,440 ft^2 and would result in an increase in impervious surfaces on the installation by 104,500 ft^2. As discussed in **Section 3.6.2.2**, stormwater management is a major consideration and design element for all new development on the installation and the overall system would improve as new development occurs and additional stormwater management improvements are made.

During facility construction, demolition, and renovation, all contractors would be required to comply with applicable statutes, standards, regulations, and procedures regarding stormwater management. During the design phase, a variety of stormwater controls or BMPs would be incorporated into construction plans. A Notice of Intent for an NPDES Construction General Permit and SWPPP would be filed for construction activities disturbing 1 or more acres and all BMPs outlined therein would be adhered to during construction activities.

Communications System. Short-term, negligible, adverse impacts on the communications system at MacDill AFB would occur. Disruptions in communications service would be anticipated as new facilities are connected to the existing communications infrastructures and Building 44 is taken off the communications system prior to demolition. Because the communications system on MacDill AFB is robust and only 12 percent of the system is currently being used, no long-term impacts are expected.

Solid Waste Management. Short- and long-term, negligible, adverse impacts on solid waste management at MacDill AFB would occur from the increased solid waste generated during facility construction, demolition, and renovation and by the increased installation population. All solid waste, both municipal and C&D debris, would be collected and transported off-site for disposal. Contractors completing any construction, demolition, or renovation project would be responsible for disposing of waste generated from these activities. Using methodology developed by the USEPA, the facility construction, demolition, and renovation supporting the MacDill AFB Alternative would generate approximately 1,192 tons of C&D debris (USEPA 2009). Disposal of C&D debris would be through an integrated construction and demolition

debris diversion approach, which would include reuse, recycling, volume reduction/energy recovery, and similar diversion actions.

Contractors would be required to comply with federal, state, and local regulations for the collection and disposal of municipal solid waste from the installation. Much of the debris would be recycled, reused, or otherwise diverted from landfills to the extent practicable. The MacDill AFB ISWMP requires up to 40 percent of C&D debris to be diverted and DoD has a goal of 60 percent diversion (MacDill AFB 2008b). Applying the DoD diversion goal rate to the potential amount of C&D debris would result in approximately 474 tons of C&D debris diverted for reuse or recycling, and approximately 718 tons being disposed of at the McKay Bay Refuse-to-Energy Facility. Therefore, no significant impacts on solid waste management are expected from the MacDill AFB Alternative.

Transportation System. Short-term, negligible to minor, adverse impacts on the transportation system would occur during facility construction, demolition, and renovation. These activities would require the delivery of materials to and removal of C&D debris from the project sites. Trucks associated with these activities would access the installation via the CVI gate. Construction crews would access the installation via the POV gates. Construction-related traffic would result in a small increase to the current traffic volume and would be temporary in nature. Intermittent traffic delays and temporary road closures could occur in the immediate vicinity of areas of the MacDill AFB Alternative. However, potential impacts would be avoided or minimized by scheduling truck deliveries outside the peak inbound traffic times. Additionally, heavy construction equipment would be driven to the work sites and kept on the installation for the duration of construction activities.

Long-term, negligible to minor, adverse impacts on the MacDill AFB transportation system would occur from the MacDill AFB Alternative. Dependent upon the number of the 395 new personnel that reside off the installation, congestion and queuing, primarily at the POV gates could increase during peak travel times. To avoid significant impacts, the installation could adjust the schedule of operations to accommodate the expected increase, upgrade entry gates, or provide additional personnel at the gates to process security checks during peak hours as required. Although the proposed facility construction, demolition, and renovation would result in a net reduction of 22,500 ft^2 of paved parking areas from the installation, the existing and proposed parking areas and the installation roadway network would be able to accommodate the increased personnel on a daily basis.

3.6.3.3 NO ACTION ALTERNATIVE

No impacts on infrastructure and transportation would occur under the No Action Alternative. No additional aircraft, personnel and dependents, or operations and maintenance activities would occur at either installation. No facility construction, demolition, or renovation would occur. Existing conditions described in **Sections 3.6.2.1** and **3.6.2.2** would remain unchanged.

3.7 Noise

3.7.1 Definition of the Resource

Sound is a physical phenomenon consisting of vibrations that travel through a medium, such as air, and are sensed by the human ear. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the noise, distance between the noise source and the receptor, receptor sensitivity, and time of day. Noise is often generated by activities essential to a community's quality of life, such as aircraft operations, construction, or vehicular traffic.

Sound varies by both intensity and frequency. Sound pressure level, described in decibels (dB), is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Hertz are used to quantify sound frequency. The human ear responds differently to different frequencies. "A-weighing," measured in dBA, approximates a frequency response expressing the perception of sound by humans. Sounds encountered in daily life and their sound levels are provided in **Table 3-17**.

Table 3-17. Common Sounds and Their Levels

Outdoor	Sound Level (dBA)	Indoor
Jet flyover at 1,000 feet	100	Rock band
Gas lawnmower at 3 feet	90	Food blender at 3 feet
Downtown (large city)	80	Garbage disposal
Heavy traffic at 150 feet	70	Vacuum cleaner at 10 feet
Normal conversation	60	Normal speech at 3 feet
Quiet urban daytime	50	Dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room

Source: CALTRAN 2013

The sound pressure level noise metric describes steady noise levels, although few noises are, in fact, constant. Therefore, additional noise metrics such as the following have been developed to describe noise:

- **Equivalent Sound Level (L_{eq})** – L_{eq} is the average sound level in dB of a given event or period of time.
- **DNL** – DNL is the average sound energy in a 24-hour period with a penalty added to the nighttime levels. Due to the potential to be particularly intrusive, noise events occurring between 10 p.m. and 7 a.m. are assessed a 10 dB penalty when calculating DNL. DNL is a useful descriptor for aircraft noise because it: (1) averages ongoing yet intermittent noise, and (2) measures total sound energy over a 24-hour period. DNL provides a measure of the overall acoustical environment, but it does not directly represent the sound level at any given time. For well-distributed sound, which is sound not focused at

a particular location such as an aircraft overflight, L_{eq} is approximately 6.4 dBA lower than DNL.

- **Annoyance** – Annoyance is a subjective response that is often triggered by interference of activities with noise. Although the reaction of an individual to noise depends on a wide variety of factors, surveys have found a correlation between the time-averaged noise level as measured in DNL and the percentage of the affected population that is highly annoyed. It is widely accepted that 65 dBA DNL is the noise level at which a substantial percentage of the population can be expected to be annoyed by noise.

Regulatory Review and Land Use Planning. The Noise Control Act of 1972 directs federal agencies to comply with applicable federal, state, and local noise control regulations. The Noise Control Act specifically exempts both aircraft operations and military training activities from state and local noise ordinances. There are no federal, state, or local noise regulations directly applicable to the Proposed Action or the MacDill AFB Alternative. Both Fairchild AFB and MacDill AFB have noise abatement procedures that are described in the following sections. USAF's land use guidelines for noise exposure are outlined in AFI 32-7063, *Air Installations Compatible Use Zones Program*. **Table 3-18** provides a general overview of recommended noise limits from aircraft operations for land use planning purposes.

Table 3-18. Recommended Noise Limits for Land Use Planning

General Level of Noise	Percent Highly Annoyed	Aircraft Noise (DNL)	General Recommendation for Noise Sensitive Land Use
Low	< 15	< 65 dBA	Acceptable
Moderate	15 to 39	65 to 75 dBA	Normally not recommended
High	> 39	> 75 dBA	Not recommended

Source: USAF 2015

3.7.2 Affected Environment

3.7.2.1 FAIRCHILD AFB

Background Noise. Existing sources of noise on and adjacent to Fairchild AFB include military and civilian aircraft overflights, road traffic, and other noises such as lawn maintenance equipment, construction, and bird and animal vocalizations. Background noise levels without aircraft operations (L_{eq} and DNL) were estimated for the areas surrounding the installation using the techniques specified in the *American National Standards Institute - Quantities and Procedures for Description and Measurement of Environmental Sound Part 3: Short-term measurements with an observer present*. Areas surrounding the installation are primarily quiet rural areas and have estimated background noise levels of less than 40 dBA in the daytime, 34 dBA at night, and 42 dBA DNL overall (ANSI 2013). **Table 3-19** outlines the estimated background noise levels for the land uses surrounding Fairchild AFB. DNL is greater than the L_{eq} because the noise occurring between 10 p.m. and 7 a.m. is assessed a 10 dB penalty.

Table 3-19. Estimated Background Noise Levels Surrounding Fairchild AFB

Direction	General Land Use Characterization	L_{eq} (dBA)		DNL (dBA)
		Daytime	Nighttime	
South	Rural	40	34	42
North/East/West	Remote/Rural	38	32	40

Source: ANSI 2013

Aircraft Noise. The existing mission and aircraft operations at Fairchild AFB are described in **Section 2.1**. The USAF adopted the NOISEMAP computer program to describe noise impacts from aircraft operations (USAF 2016a). NOISEMAP is a suite of computer programs and components developed by the USAF to predict noise exposure near an airfield due to aircraft flight, maintenance, and ground run-up operations. NOISEMAP accounts for all aircraft activities, including landings, take-offs, in-flight operations, maintenance activities, and engine run-ups. NOISEMAP Version 7.3 was used to calculate the existing DNL noise contours at Fairchild AFB.

Figure 3-3 shows the existing DNL noise contours plotted in 5 dB increments ranging from 65 to 75 dBA DNL. The noise contours depict 2014 operational conditions at Fairchild AFB (USAF 2014b). There have been no substantial changes in operations or mission at the installation since these noise contours were developed; therefore, they have been carried forward as a comparative baseline to determine the level of impacts under NEPA. The existing 65 dBA DNL noise contour extends approximately 0.5 mile from both ends of the installation's runway.

The 65 dBA DNL is the noise level below which generally all land uses are compatible with noise from aircraft operations. It should be emphasized that these noise levels, which are often shown graphically as contours on maps, are not discrete lines that sharply divide louder areas from land largely unaffected by noise. Instead, they are part of a planning tool that depicts the general noise environment around the installation based on typical aviation activities. Areas beyond 65 dBA DNL can also experience levels of appreciable noise depending upon training intensity or weather conditions. In addition, DNL noise contours may vary from year to year due to fluctuations in operational tempo due to unit deployments, funding levels, and other factors.

Table 3-20 presents the existing land acreage exposed to noise levels 65 dBA DNL or greater near Fairchild AFB. Areas exposed to sound levels greater than 65 dBA DNL are predominantly within the installation boundary with 83 acres off the installation and 1,535 acres on the installation that are within the 65 dBA DNL contour. There are no schools, churches, hospitals, or noise sensitive areas within the existing 65 dBA DNL contour. Based on aerial photography interpretation, there are no residences within the 65 dBA DNL contour.

Sources: USAF 2016a, USAF 2014b

Figure 3-3. Existing Noise Contours for Fairchild AFB

Table 3-20. Area within Noise Contours at Fairchild AFB – Existing Conditions

Noise Contour (dBA DNL)	Area Under Contours (Acres)		
	On-Installation	Off-Installation	Total
65 to 69	583	82	665
70 to 74	463	1	464
75 to 79	325	0	325
80 to 84	136	0	136
≥85	28	0	28
Total	**1,535**	**83**	**1,618**

Sources: Interpreted from data from USAF 2014b, USAF 2016a

Noise Abatement Procedures. Aircraft noise abatement procedures at Fairchild AFB have been designed to minimize impacts on the surrounding community while maximizing operational capacity and flexibility. The installation's aircraft noise abatement procedures restrict overflights over Eastern Washington State Hospital, Sunset Elementary School, and housing areas on the installation. Overflights are not permitted below 1,000 feet above ground level (AGL) over Airway Heights Correctional Facility (USAF 2014b). Overflights over the City of Spokane are not permitted below 5,000 feet above MSL (i.e., approximately 3,200 feet AGL) for fixed-wing aircraft or below 500 feet AGL for helicopters. Noise complaints in the community around Fairchild AFB are infrequent. Complaints range from general noise complaints to complaints of low-flying aircraft and noise from exploding ordnance.

3.7.2.2 MACDILL AFB

Background Noise. Existing sources of noise on and adjacent to MacDill AFB include military and civilian aircraft overflights, road traffic, and other noises such as lawn maintenance equipment, construction, and bird and animal vocalizations. Background noise levels without aircraft operations (L_{eq} and DNL) were estimated for areas surrounding MacDill AFB using the techniques specified in **Section 3.7.2.1** for Fairchild AFB. Areas surrounding the installation are primarily quiet suburban residential and have estimated background noise levels of less than 45 dBA in the daytime, 39 dBA at night, and 48 dBA DNL overall (ANSI 2013). **Table 3-21** outlines the estimated background noise levels for the land uses surrounding MacDill AFB.

Table 3-21. Estimated Background Noise Levels Surrounding MacDill AFB

Direction	General Land Use Characterization	L_{eq} (dBA)		DNL (dBA)
		Daytime	Nighttime	
North	Suburban	45	39	48
South/East/West	Rural/Over Water	38	32	40

Source: ANSI 2013

Aircraft Noise. The existing mission and aircraft operations at MacDill AFB are described in **Section 2.2.2.1**. NOISEMAP Version 7.3 was used to calculate the existing DNL noise contours at MacDill AFB (USAF 2016a). **Figure 3-4** shows the existing DNL noise contours plotted in 5 dB increments ranging from 65 to 75 dBA DNL. The existing 65-dBA DNL noise contour extends approximately 1 mile from both ends of the installation's runway. The noise contours depict 2013 operational conditions at MacDill AFB and also reflect eight additional

Sources: USAF 2016a, USAF 2017b

Figure 3-4. Existing Noise Contours for MacDill AFB

KC-135s (i.e., 24 total) added to MacDill AFB in FY 2018 and 23 U.S. Army Reserve (USAR) Black Hawk helicopters proposed for beddown on MacDill AFB in the near future under separate actions (USAF 2017b, USAF and USAR 2017). No other substantial changes in operations or mission at the installation have occurred since these noise contours were developed; therefore, they have been carried forward as a comparative baseline to determine the level of impacts under NEPA.

Table 3-22 presents the existing land acreage exposed to noise levels 65 dBA DNL or greater near MacDill AFB. There are 553 areas off the installation and 1,342 acres on the installation within the existing 65 dBA DNL contour. Except for residential areas immediately north of MacDill AFB, all the contours are over the water or the installation itself. There are no schools, churches, or hospitals within the existing 65 dBA DNL contour.

Table 3-22. Area within Noise Contours at MacDill AFB – Existing Conditions

Noise Contour (dBA DNL)	Area Under Contours (Acres)		
	On-Installation	Off-Installation	Total
65 to 69	469	512	981
70 to 74	373	41	414
75 to 79	213	0	213
80 to 84	211	0	211
≥85	76	0	76
Total	1,342	553	1,895

Sources: Interpreted from data from USAF 2017b, USAF 2016a

Noise Abatement Procedures. Aircraft noise abatement procedures at MacDill AFB have been designed to minimize impacts on the surrounding community while maximizing operational capacity and flexibility. The high population density of the area surrounding the installation requires strict use of noise abatement procedures for arriving and departing aircraft. To reduce the impacts of noise, MacDill AFB limits transient aircraft to one approach and a full stop landing between the hours of 10 p.m. and 6 a.m. Fighter aircraft are restricted to straight-in/full-stop approaches/landings after 9 p.m. Additionally, the installation controls and schedules missions to keep noise levels low, especially at night. Flight patterns specific to MacDill AFB have resulted from the following considerations:

- Takeoff patterns routed to avoid noise-sensitive areas as much as possible
- Arrivals and departures routed to avoid restricted airspace
- Criteria governing the speed, rate of climb, and turning radius for each type of aircraft
- Efforts to control and schedule missions to keep noise levels low, especially at night
- Coordination with the Federal Aviation Administration to minimize conflict with civil aircraft operations (USAF 2017b).

3.7.3 Environmental Consequences

This section discusses noise from construction, noise from individual aircraft, potential changes to land use compatibility from noise, and potential noise impacts on human health and safety due to implementing the Proposed Action or MacDill AFB Alternative. A discussion of the impacts of noise on biological resources, land use compatibility as a whole, and environmental

justice and sensitive receptors is provided in **Sections 3.2.3**, **3.8.3**, and **3.11.3,** respectively. Changes in noise would be considered significant if they would lead to a violation of any federal, state, or local noise ordinance, or substantially increase areas of incompatible land use outside the installation.

3.7.3.1 PROPOSED ACTION

The Proposed Action would result in short- and long-term, negligible to minor, adverse impacts on the noise environment. Short-term impacts would be from noise generated by heavy equipment during facility construction, demolition, and renovation. Long-term impacts would be from an increase in aircraft noise in areas surrounding Fairchild AFB. The Proposed Action would not lead to a violation of any federal, state, or local noise ordinances, and would not substantially increase areas of incompatible land use on and adjacent to Fairchild AFB.

Facility Construction, Demolition, and Renovation. The proposed facility construction, demolition, and renovation at Fairchild AFB would require the use of heavy equipment that would generate short-term increases in noise near the areas of the Proposed Action. **Table 3-23** presents typical noise levels (dBA at 50 feet) for the main phases of outdoor construction. Individual pieces of heavy equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 feet (USAF 2014b, ANSI 2013). With multiple items of equipment operating concurrently, noise levels can be high within several hundred feet of active construction sites.

Table 3-23. Noise Levels Associated with Outdoor Construction

Construction Phase	L_{eq} (dBA at 50 feet)
Ground clearing	84
Excavation, grading	89
Foundations	78
Structural	85
Finishing	89

Sources: USEPA 1971, FHWA 2006

All facility construction, demolition, and renovation would be within the Fairchild AFB property boundary, collocated with other existing noise-compatible activities, and end with completion of such activities. The nearest off-installation residential area to an area of the Proposed Action is approximately 4,300 feet to the north, and heavy equipment noise would be barely audible at this distance. Some people living or working near the areas of the Proposed Action may notice or potentially be annoyed by the noise. However, these activities would be conducted in the context of an active AFB where aircraft and other types of noise are typical. Given the temporary nature of the proposed construction activities, distance to nearby noise-sensitive areas; and the existing noise environment, these impacts would be minor. The following BMPs would be performed to reduce further any realized noise impacts:

- Heavy equipment use would occur primarily during normal weekday business hours in areas near to noise-sensitive land uses such as residential and recreational areas.
- Heavy equipment mufflers would be maintained properly and in good working order.

- Personnel, particularly equipment operators, would wear adequate personal hearing protection to limit exposure and ensure compliance with federal health and safety regulations.

Individual Aircraft. Aircrews operating the additional KC-135 aircraft would use similar flight procedures to those used by existing KC-135 aircrews currently based at Fairchild AFB. Aircrews would conduct operations primarily during daytime hours, with approximately 10 percent of their operations between 10 p.m. and 7 a.m. Depending on the aircraft altitude and timing, individual overflights could interfere with communication, disrupt sleep, and intermittently annoy individuals. With the addition of 12 KC-135 at the installation, there would be a 33 percent increase in these events when compared to current conditions. As with existing conditions, overflights could continue to annoy some nearby individuals from time to time; however, the overall noise environment would be comparable to the existing KC-135 mission. Therefore, these impacts would be minor. Aircraft noise abatement procedures currently in place at Fairchild AFB would continue to be implemented to reduce these already limited impacts.

Land Use Compatibility. Noise levels on and adjacent to Fairchild AFB following the addition of the proposed KC-135 aircraft were calculated using the NOISEMAP 7.3 (USAF 2016a). The addition of the 12 proposed KC-135s and associated air operations would produce a negligible increase in the noise levels surrounding Fairchild AFB. **Figure 3-5** shows the installation-wide DNL noise contours with and without the Proposed Action. **Table 3-24** presents the land acreage exposed to noise levels 65 dBA DNL or greater with and without the Proposed Action. The 65 dBA DNL noise contour would continue to extend approximately 0.5 mile from both ends of the runway. However, the Proposed Action would increase the off-installation areas exposed to 65 dBA DNL or greater from 83 to 100 acres. The additional 17 acres would be primarily on the east side of the runway over undeveloped and agricultural areas and not in any concentrated location or residential area. Changes in the overall noise environment at and surrounding Fairchild AFB would be minute and indistinguishable from existing conditions. There would continue to be no schools, churches, or hospitals within the new 65-dBA DNL contour. Based on aerial photography analysis, there would not be any residences within the 65-dBA DNL contour under Proposed Action. Therefore, impacts on land use compatibility from the Proposed Action would be negligible.

Human Health and Safety. Equivalent sound level 80 dBA is the noise level below which generally there are negligible impacts to human hearing (USAF 2016b). Implementation of the Proposed Action would not expose off-installation areas to noise levels greater than 80 dBA DNL. Approximately 167 acres on Fairchild AFB would be exposed to noise levels of 80 dBA DNL or greater, an increase of 3 acres when compared to existing conditions (see **Table 3-24**). Other than aircraft support structures and hangers, no on-installation buildings would be exposed to noise levels of 80 dBA DNL or greater. The Fairchild AFB occupational hearing program would continue to be implemented in accordance with AFI 48-127, *Occupational Noise and Hearing Conservation Program*, and Occupational Safety and Health Administration (OSHA) regulations regarding occupational noise exposure (USAF 2016b); therefore, these impacts would be negligible.

Sources: USAF 2016a, USAF 2014b

Figure 3-5. Noise Contours for Proposed Action

Table 3-24. Area within Noise Contours at Fairchild AFB – Proposed Action

Noise Contour (dBA DNL)	Area Under Contours (Acres)					
	Existing Conditions			Proposed Action		
	On-Installation	Off-Installation	Total	On-Installation	Off-Installation	Total
65 to 69	583	82	665	587	99	686
70 to 74	463	1	464	466	1	467
75 to 79	325	0	325	326	0	326
80 to 84	136	0	136	138	0	138
≥85	28	0	28	29	0	29
Total	1,535	83	1,618	1,546	100	1,646

Sources: Interpreted from data from USAF 2014b, USAF 2016a

In residential areas, long-term exposure to aircraft-induced L_{eq} of 60 dBA has been associated with an increased incidence of hypertension (Kaltenbach et al. 2008). For well-distributed sound, L_{eq} is approximately 6.4 dBA lower than DNL; therefore, 65 dBA DNL is a conservative surrogate for the 60 dBA L_{eq} threshold. The Proposed Action would not expose any residences to the 65 dBA DNL contour under Proposed Action. No adverse impacts would result from potential increased incidence of hypertension.

3.7.3.2 MACDILL AFB ALTERNATIVE

The MacDill AFB Alternative would result in short-term, minor and long-term, minor to moderate adverse impacts on the noise environment. Short-term impacts would be from noise generated by heavy equipment during facility construction, demolition, and renovation. Long-term impacts would be from an increase in aircraft noise in areas surrounding MacDill AFB. The MacDill AFB Alternative would not lead to a violation of any federal, state, or local noise ordinances, and would not substantially increase areas of incompatible land use on and adjacent to MacDill AFB.

Facility Construction, Demolition, and Renovation. The proposed facility construction, demolition and renovation under the MacDill AFB Alternative would be similar in nature and overall level of noise as that described in **Section 3.7.3.1** for the Proposed Action. All facility construction, demolition, and renovation would be within the MacDill AFB property boundary, collocated with other existing noise-compatible activities, and end with completion of such activities.

The nearest off-installation residential area to an area of the MacDill AFB Alternative is approximately 2,500 feet north, and heavy equipment noise would be barely audible at this distance. Some people living or working near the areas of the MacDill AFB Alternative may notice or potentially be annoyed by the noise. However, these activities would be conducted in the context of an active AFB where aircraft and other types of noise are typical. Given the temporary nature of proposed facility construction, demolition, and renovation; distance to nearby noise sensitive areas; and the existing noise environment, these impacts would be minor. BMPs identical to those outlined in **Section 3.7.3.1** for the Proposed Action would be implemented for the MacDill AFB Alternative to further reduce any realized noise impacts.

Individual Aircraft. Aircrews operating the additional KC-135 aircraft would use similar flight procedures to those used by existing KC-135 aircrews currently based at MacDill AFB. Depending on the aircraft altitude and timing, individual overflights could interfere with communication, disrupt sleep, and intermittently annoy individuals. With the addition of 12 KC-135 at the installation, there would be a 50 percent increase in these events when compared to current conditions. As with existing conditions, overflights could continue to annoy some nearby individuals from time to time; however, the overall noise environment would be comparable to the existing KC-135 mission. Therefore, these impacts would be minor. Aircraft noise abatement procedures at MacDill AFB would continue to be implemented to reduce these already limited impacts.

Land Use Compatibility. Noise levels on and adjacent to MacDill AFB following the addition of the proposed KC-135 aircraft were calculated using NOISEMAP 7.3 (USAF 2016a). The addition of the 12 proposed KC-135s and associated air operations would produce a moderate increase in the noise levels surrounding MacDill AFB. **Figure 3-6** shows the installation-wide DNL noise contours with and without the MacDill AFB Alternative. **Table 3-25** presents the land acreage exposed to noise levels 65 dBA DNL or greater with and without the MacDill AFB Alternative. The 65 dBA DNL noise contour would continue to extend approximately 1 mile from both ends of the runway but would be extended slightly farther than existing conditions. The area off-installation exposed to 65 dBA DNL or greater would increase from 553 to 720 acres with approximately 56 percent of that amount being over the water. Excluding acreage over water, approximately 52 additional acres containing 80 residences north of the base would be within the 65 to 69 dBA DNL noise contour, and approximately 21 additional acres containing 55 residences that were within the 65 to 69 dBA DNL noise contour would be within the 70 to 74 dBA DNL noise contour. Residential use is normally not recommended for areas within the 65 dBA to 74 dBA DNL noise contours. This would constitute a moderate increase in areas of incompatible land use outside the installation. These areas are currently situated 1 mile from the end of the runway and are currently exposed to persistent aircraft noise. With the addition of the aircraft, some individuals within these areas may sense the increase in aircraft and become highly annoyed. Therefore, impacts on land use compatibility would be moderate.

Table 3-25. Area within Noise Contours at MacDill AFB – MacDill AFB Alternative

Noise Contour (dBA DNL)	Area Under Contours (Acres)					
	Existing Conditions			MacDill AFB Alternative		
	On-Installation	Off-Installation	Total	On-Installation	Off-Installation	Total
65 to 69	469	512	981	464	638	1,102
70 to 74	373	41	414	389	82	471
75 to 79	213	0	213	217	0	217
80 to 84	211	0	211	211	0	211
≥85	76	0	76	80	0	80
Total	1,342	553	1,895	1,361	720	2,081

Sources: Interpreted from data from USAF 2017b; USAF 2016a

Sources: USAF 2016a, USAF 2017b

Figure 3-6. Noise Contours for MacDill AFB Alternative

Human Health and Safety. Equivalent sound level 80 dBA is the noise level below which generally there are negligible impacts to human hearing (USAF 2016b). Implementation of the MacDill AFB Alternative would not expose off-installation areas to noise levels greater than 80 dBA DNL. Approximately 291 acres on MacDill AFB would be exposed to noise levels of 80 dBA DNL or greater, an increase in 4 acres when compared to existing conditions (see **Table 3-25**). Other than aircraft support structures and hangers, no buildings would be exposed to noise levels of 80 dBA DNL or greater. The MacDill AFB occupational hearing program would continue to be implemented in accordance with AFI 48-127 and OSHA regulations regarding occupational noise exposure (USAF 2016b); therefore, these impacts would be negligible.

In residential areas, long-term exposure to aircraft-induced L_{eq} of 60 dBA has been associated with an increased incidence of hypertension (Kaltenbach et al. 2008). For well-distributed sound, L_{eq} is approximately 6.4 dBA lower than DNL; therefore, 65 dBA DNL is a conservative surrogate for 60 dBA L_{eq}. The MacDill Alternative would expose approximately 80 additional residences off-installation to long-term noise levels greater than 60 dBA L_{eq} (i.e., 65 dBA DNL) when compared to existing conditions. Minor, adverse impacts would result from the potential increased incidence of hypertension.

3.7.3.3 NO ACTION ALTERNATIVE

No impacts on the noise environment would occur under the No Action Alternative. No facility construction, demolition, and renovation would occur, and there would be no increases in support personnel or aircraft operations. Noise conditions would remain unchanged when compared to existing conditions at both installations as identified in **Sections 3.7.2.1** and **3.7.2.2**.

3.8 Land Use

3.8.1 Definition of the Resource

Land Use. Land use refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws. Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. However, there is no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, labels, and definitions vary among jurisdictions. Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. There is a wide variety of land use categories resulting from human activity. Descriptive terms for human activity land uses often used include residential, commercial, industrial, military, agricultural, institutional, transportation, communications and utilities, and recreational.

In appropriate cases, the location and extent of a proposed action needs to be evaluated for its potential impacts on a project site and adjacent land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include matters such as existing land use at the project site, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its permanence.

Coastal Zone Consistency Review. The federal Coastal Zone Management Program comprehensively addresses the nation's coastal issues through a voluntary partnership between the federal government and coastal states and territories. Authorized by the Coastal Zone Management Act (CZMA) of 1972 (16 USC § 1451 et seq., as amended), the program aims to protect, restore, and responsibly develop the nation's diverse coastal communities and resources. The coastal zone refers to the coastal waters and the adjacent shorelines, including islands, transitional and intertidal areas, salt marshes, wetlands, and beaches. The National Oceanic and Atmospheric Administration (NOAA) administers the program.

Section 307 of the CZMA, called the "federal consistency" provision, provides a state with input authority in federal agency decision making for activities that may affect a state's coastal uses or resources. The state would not otherwise have such authority through other federal programs. Generally, federal consistency requires that federal actions, within and outside the coastal zone, which have reasonably foreseeable impacts on any coastal use (land or water) or natural resource of the coastal zone, be consistent with the enforceable policies of a state's federally approved coastal management program. Federal actions include federal agency activities, federal license or permit activities, and federal financial assistance. Federal agency activities must be consistent to the maximum extent practicable with the enforceable policies of a state's coastal management program.

3.8.2 Affected Environment

3.8.2.1 FAIRCHILD AFB

Installation Land Use. The 2014 *Fairchild AFB Installation Development Plan* (IDP) describes physical development on the installation and includes a long-range development plan. The IDP details 11 land use categories and 6 planning districts. Existing and future land use categories include administrative, airfield (or airfield pavements), aircraft operations and maintenance, community commercial, community service, housing accompanied, housing unaccompanied, industrial, medical/dental, open space, and outdoor recreation. The six planning districts (i.e., administrative, community center, operations and maintenance, training, munitions, and residential) define the primary focus of planning for long-term future growth for that area's specific character. In general, military housing, administrative facilities, aircraft operations and maintenance facilities, commercial facilities, community services facilities, and outdoor recreation areas at Fairchild AFB are north of the airfield while the areas south of the airfield are primarily industrial and open space. Existing airfield operations and installation land uses are compatible with adjacent land uses and do not have any notable compatibility issues either internally or outside the installation boundary (Fairchild AFB 2014a).

The proposed facility construction, demolition, and renovation areas primarily fall within the aircraft operations and maintenance land use category; however, portions of these project areas are within the airfield, community commercial, industrial, and open space land use categories (see **Table 3-26**). Land use categories adjacent to the proposed construction areas include administrative and outdoor recreation. Most of the proposed construction areas fall within the operations and maintenance planning district, but the proposed renovation and construction of an addition to Building 2379 occurs within the community center planning district (Fairchild AFB 2014a). The operations and maintenance planning district includes the airfield, runway, and most of the mission-support functions. The community center planning district is characteristic

of a town center area that supports the adjacent residential areas and mission/work areas. **Table 3-26** lists the existing and proposed future land use categories and planning districts associated with the proposed construction areas at Fairchild AFB.

Table 3-26. Existing Land Use, Future Land Use, and Planning Districts Associated with the Proposed Action

Proposed Construction, Demolition, and Renovation Projects	Existing Land Use Category	Future Land Use Category	Planning District
Base and Squadron Operations Facility construction	Open space	Aircraft operations and maintenance	Operations and maintenance
Building 1 (Base and Squadron Operations Facility) and parking lot demolition	Aircraft operations and maintenance	Aircraft operations and maintenance	Operations and maintenance
Building 1007 (Primary Fuel Cell) renovation	Aircraft operations and maintenance	Aircraft operations and maintenance	Operations and maintenance
Building 1017 (Central Tool Kit) renovation, awning construction, and pavement replacement	Aircraft operations and maintenance	Aircraft operations and maintenance	Operations and maintenance
Building 2005 (Refueling Squadron and Aircraft Maintenance Personnel) renovation	Aircraft operations and maintenance	Aircraft operations and maintenance	Operations and maintenance
Building 2007 (Aircraft Maintenance Unit) renovation	Aircraft operations and maintenance	Aircraft operations and maintenance	Operations and maintenance
Building 2045 (Flightline Warehouse) renovation, addition construction, and Flightline Gate relocation	Aircraft operations and maintenance	Industrial	Operations and maintenance
Building 2045 (Flightline Warehouse) parking lot construction	Airfield	Industrial	Operations and maintenance
Building 2048 (Flight Simulator) addition construction	Industrial	Aircraft operations and maintenance	Operations and maintenance
Building 2050 (Hangar Bay) renovation	Aircraft operations and maintenance	Aircraft operations and maintenance	Operations and maintenance
Building 2379 (Fitness Center) renovation and addition construction	Community commercial	Community service	Community center
Parking ramp renovation (pavement replacement) and fuel line replacement	Airfield	Airfield	Operations and maintenance

Source: Fairchild AFB 2014a

The Fairchild AFB *ERP Land Use Control Management Plan* documents the processes used to implement, monitor, maintain and enforce remedies that protect human health and the environment from ERP sites in accordance with the CERCLA and the National Contingency Plan. Three ERP sites coincide with the proposed facility construction, demolition, and renovation areas. ERP Site SS-26 is immediately adjacent to Building 1017; ERP Site SS-39 may coincide with Buildings 1, 2048, and 2050; and ERP Site TU-504 coincides with the proposed fuel line replacement. Additionally, contamination resulting from historic PFOA and PFOS releases may coincide with Building 1, its associated parking lot, and the proposed base and squadron operations facility.

Specific land use controls (LUCs) in place for ERP sites SS-26 and SS-39 include restrictions controlling access to the sites, restrictions against the use of contaminated groundwater, and

implementation of a dig permit system limiting access and exposure to contaminated soils and groundwater (Fairchild AFB 2007b). LUCs for ERP Site TU-504 are not included in the *ERP Land Use Control Management Plan*; however, the first 12 feet of surface soils have been remediated to industrial standards and further investigation and appropriate corresponding remediation would be completed should excavation reach 12 feet bgs. Refer to **Section 3.5.2.1** for additional details on these ERP sites and their associated LUCs.

Land use restrictions are also associated with the airfield and aircraft operations on Fairchild AFB. The USAF Air Installation Compatible Use Zone (AICUZ) program provides guidelines for compatible use and recommended land uses around airfields based on DoD-recommended uses. Land use guidelines set forth in the AICUZ program reflect recommendations for clear zones (CZs), accident potential zones (APZs) I and II, and noise contours. CZs and APZs are areas where nonairfield development is constrained or discouraged for airfield safety. All development is prohibited within CZs. APZs use density development requirements to discourage development. The Fairchild AFB noise contours around the airfield range from 65 to greater than 85 dBA DNL (i.e., the existing noise contours). According to USAF recommended land use compatibility guidelines presented in the Fairchild AFB AICUZ Study, land uses are generally compatible with noise levels at or below 65 dBA DNL (Fairchild AFB 2007a). No on-installation residences, schools, churches, hospitals, or other noise sensitive land uses are within the CZ, APZs, or 65-dBA DNL noise contour. Refer to **Section 3.7.2.1** for more information on the existing noise environment at Fairchild AFB.

Surrounding Area Land Use. Fairchild AFB is located in Spokane County, Washington. The lands immediately surrounding the installation comprise the unincorporated (i.e., not self-governed) communities and lands of the West Plains. The West Plains are defined as the plateaued areas north of Medical Lake, west of Latah Creek and the Spokane River, south of Deep Creek ravine, and the eastern boundary of Fairchild AFB (City of Spokane 2014). Agriculture is the dominant land use within Spokane County's unincorporated areas and the West Plains area adjacent to Fairchild AFB with vast areas west and southeast of the installation devoted to grain production or maintained as open rangeland. Land uses surrounding the installation are also primarily agricultural with a few commercial, industrial, and residential areas. Residential land uses adjacent to the installation consist of very low-density residential parcels that are 3 to 10 acres in size (Fairchild AFB 2014a).

Comprehensive land use planning for the West Plains is currently achieved via the Comprehensive Plans established for the cities of Spokane, Airway Heights, Medical Lake, and Cheney; the 2014 *West Plains Transportation Subarea Plan*; the *West Plains Development Code*; and the 2009 *Fairchild Joint Land Use Study* (JLUS). These plans were developed in part to identify compatible land uses and growth management guidelines near the installation (City of Spokane 2014). As recommended in the JLUS and in the Spokane Tribe of Indians' *West Plains Mixed-Use Development Project EIS*, the Tribe enacted the *West Plains Development Code* to implement measures for restricted building heights; reduced density, noise, light, and glare; and limitation of wildlife attractants for the Spokane Tribe of Indians hotel and casino that is located immediately northeast of the installation (Spokane County 2009, Spokane Tribe of Indians 2017, USBIA and the Spokane Tribe of Indians 2013, USAF 2014b).

Spokane County, the City of Spokane, and the City of Airway Heights similarly revised their land use ordinances to implement JLUS recommendations (Spokane Tribe of Indians 2017).

As discussed in the 2007 Fairchild AFB AICUZ Study, USAF provides recommendations and guidelines for compatible land uses to local jurisdictions through the AICUZ program. USAF has restrictive easements on privately and publicly owned land adjacent to Fairchild AFB within the CZs to protect against incompatible uses, and existing land uses within the northern and southern APZ I areas are compatible. The Fairchild AFB AICUZ Study identified incompatible residential and public use lands within the northern APZ II area off the installation (Fairchild AFB 2014a, USAF 2014b). No off-installation residences or other noise sensitive land uses exist within the existing 65-dBA DNL noise contour. Refer to **Section 3.7.2.1** for more information on the existing noise environment of the area surrounding Fairchild AFB.

Additionally, the *Spokane County Zoning Code, Chapter 14.700, Airport Overlay Zones* (AOZs) as amended January 2008, implements development restrictions near airports through identification of AOZs. The AOZ Program is similar in design and intent to the AICUZ Program. The Spokane County Zoning Code effectively implements Federal Aviation Administration-regulated APZs to identify areas and restrict land uses within Spokane County communities immediately proximal to Fairchild AFB and other airports where the greatest potential for aircraft accidents exists (Spokane County 2008, Spokane County 2009).

Coastal Zone Consistency Review. Fairchild AFB is not within the coastal zone of Washington state; therefore, potential impacts on the coastal zone from the proposed facility construction, demolition, and renovation areas at Fairchild AFB is not discussed further (WA DOE 2010).

3.8.2.2 MACDILL AFB

Installation Land Use. The 2017 *MacDill AFB IDP* describes physical development on the installation and includes a long-range development plan. The IDP details 11 existing and future land use categories and 6 planning districts. Existing and future land use categories include administrative, airfield (or airfield pavements), aircraft operations and maintenance, community commercial, community service, housing accompanied, housing unaccompanied, industrial, medical, open space, and outdoor recreation. Compatible land uses have generally been developed within close proximity to one another to achieve functional areas (e.g., aircraft facilities are adjacent to the airfield). The six planning districts (i.e., accompanied housing, administration core, front gate, recreation, south airfield, and west & central airfield) are identified by their character, land use, intensity of development, or the type of activities occurring within them. In general, military housing, administrative facilities, airfield operations and maintenance facilities, commercial facilities, and community services are within the northeastern portion of the installation; the airfield comprises the central and western portions of the installation; open space and industrial areas comprise the northwestern, southwestern, and southern portions of the installation; and a large recreational area is within the southeastern portion of the installation (MacDill AFB 2017a).

The proposed facility construction, demolition, and renovation areas primarily fall within the aircraft operations and maintenance land use category; however, portions of these project areas are within the airfield, community service, housing unaccompanied, and industrial land use

categories (see **Table 3-27**). Land use categories adjacent to the proposed construction areas are administrative, community commercial, housing accompanied, industrial, and outdoor recreation. Most of the proposed construction areas fall within the administration core planning district, but construction of the fuel cell hangar occurs within the front gate planning district. The administration core planning district includes most of the operational facilities on MacDill AFB, and the front gate planning district provides a variety of functions from community commercial uses to high-profile DoD mission facilities (MacDill AFB 2017a). **Table 3-27** lists the existing and proposed future land use categories and planning districts associated with the proposed facility construction, demolition, and renovation areas at MacDill AFB.

Table 3-27. Existing Land Use, Future Land Use, and Planning Districts Associated with the MacDill AFB Alternative

Proposed Construction, Demolition, and Renovation Projects	Existing Land Use Category	Future Land Use Category	Planning District
Hangar 2 (Hangar Bay) renovation	Aircraft operations and maintenance	Aircraft operations and maintenance	Administration core
Building 55 (Aircraft Maintenance Squadrons) renovation	Aircraft operations and maintenance	Aircraft operations and maintenance	Administration core
Building 56 (Aircraft Maintenance Squadrons) renovation	Aircraft operations and maintenance	Aircraft operations and maintenance	Administration core
Building 303 (Fitness Center) addition construction	Community service	Community service	Administration core
Building 378 (Dormitory) renovation	Housing unaccompanied	Housing unaccompanied	Administration core
Fuel Cell Hangar construction	Airfield	Airfield	Front gate
North Ramp renovation (hard stand repair and fuel hydrant system installation)	Airfield	Airfield	Administration core
Squadron Operations Facility construction, Building 44 demolition, and parking lot expansion	Aircraft operations and maintenance	Aircraft operations and maintenance	Administration core
Warehouse Facility construction	Aircraft operations and maintenance	Aircraft operations and maintenance	Administration core

Source: MacDill AFB 2017a

The MacDill AFB *Land Use Control Implementation Plan*, in accordance with the CERCLA and National Contingency Plan, details the 23 LUCs in place for most of the ERP sites on the installation (MacDill AFB 2017a). Three ERP sites coincide with the proposed facility construction, demolition, and renovation areas. Site 57, Former Pumphouse 76 and Fuel Pits 5-12, coincides with the proposed Fuel Cell Hangar; Solid Waste Management Unit 61 coincides with portions of the North Ramp; and Solid Waste Management Unit 76 coincides with the proposed squadron operations facility, proposed warehouse facility, Hangar 2, Building 44, Building 55, Building 56, and portions of the North Ramp. Specific LUCs in place for Site 57 and Solid Waste Management Unit 76 prohibit residential uses on the site and require long-term groundwater monitoring. The LUC in place for Solid Waste Management Unit 61 requires long-term groundwater monitoring (MacDill AFB 2018b). Refer to **Section 3.5.2.2** for additional details on these ERP sites and their associated LUCs.

Similar to Fairchild AFB, MacDill AFB's AICUZ program provides guidelines for compatible land use within CZs, APZs I and II, and areas within noise contours ranging from 65 to greater than 85 dBA DNL. No on-installation residences, schools, churches, hospitals, or other noise-sensitive land uses fall within the CZs, APZs, or noise contours (MacDill AFB 2017a). Refer to **Section 3.7.2.2** for more information on the existing noise environment at MacDill AFB.

Surrounding Area Land Use. The northern boundary of MacDill AFB lies adjacent to the municipal boundary of the City of Tampa, and water surrounds the installation to the east (Hillsborough Bay), south (Tampa Bay), and west (Old Tampa Bay) (MacDill AFB 2017a). Land use north of the installation is varied consisting predominantly of single and multifamily residential areas, public/quasi-public space (e.g., recreational facilities and open space), industrial areas, and mixed commercial use. Land use immediately adjacent to the north of the installation boundary is predominantly industrial, public/quasi-public space, and residential (Hillsborough County 2017).

The City of Tampa has planning and zoning jurisdiction over land directly north of MacDill AFB's northern boundary. It does not have zoning jurisdiction over federal lands. A JLUS was completed in 2006 by the City of Tampa and MacDill AFB. The JLUS aimed to review and recommend compatible land uses adjacent to MacDill AFB to protect the health, safety, and welfare of the surrounding community (City of Tampa and MacDill AFB 2006). The City of Tampa continues to implement compatible land use policies in its planning efforts (MacDill AFB 2017a). The following policies are some of those included in the latest Comprehensive Plan for the City of Tampa, which includes policies and objectives meant to support and strengthen the role of MacDill AFB:

- All new residential development within the MacDill AFB flight path shall be limited to 10 dwelling units per acre.
- Prohibit new construction and redevelopment which inhibits the safe and efficient operation of airport facilities within the flight path of MacDill AFB.
- Include MacDill AFB in the Development Review process to maintain open communication regarding all petitions for rezoning and special use requests generally within the MacDill AFB flight path.
- Continue to consult MacDill AFB AICUZ Report and Compatibility Use District recommendations when addressing proposed land use changes within the MacDill AFB flight path.
- Continue to promote compatible development within the MacDill AFB flight path through maintenance of reduced densities.
- The City of Tampa shall amend the City of Tampa Code of Ordinances to include noise attenuation measures to achieve a maximum outdoor to indoor noise level of 30 dB for residential development within the 70 dBA DNL noise contour or a lesser dB for any portion of the property located in a lower dBA DNL noise contour.

- Prohibit future noise sensitive development that does not provide the required noise attenuation features within the noise contours adjacent to MacDill AFB (City of Tampa 2016).

MacDill AFB conducted an AICUZ Study in 2008 that recommended land use guidelines for land surrounding the installation in the City of Tampa to assist in preparing their local land use plans. CZs and APZs at the south end of the runway do not have any adjacent conflicting land uses because they overlay water, but at the north end of the runway, private acreage and residences lie within the CZs and APZs. No noise-sensitive land uses occur within the 70 dBA DNL noise contours; however, a residential area to the northeast of the installation is within the 65 dBA DNL noise contour (MacDill AFB 2017a). Refer to **Section 3.7.2.2** for more information on the existing noise environment in the areas surrounding MacDill AFB.

Coastal Zone Consistency Review. The Florida Coastal Management Program (FCMP), approved by NOAA in 1981 and codified at Florida Statutes Chapter 380 Part II, consists of a network of nine state agencies and five regional water management districts. These agencies and districts implement 24 statutes that protect and enhance the state's natural, cultural, and economic coastal resources. The FDEP directs implementation of the FCMP, and the Florida State Clearinghouse coordinates federal agency consistency reviews (except for proposed actions requiring permits under Section 404 of the Clean Water Act [CWA] and Section 10 of the Rivers and Harbors Act, and offshore activities, which are coordinated by the U.S. Army Corps of Engineers). The coastal zone in Florida is defined as the 67 counties and adjacent territorial seas. MacDill AFB is within the coastal zone. A project must be shown to be consistent to the maximum extent practicable with the enforceable policies of the FCMP. In accordance with the CZMA, MacDill AFB maintains consistency with the FCMP to the maximum extent practicable.

3.8.3 Environmental Consequences

The significance of potential land use impacts is based on the level of land use sensitivity in areas affected by a proposed action and compatibility of proposed actions with existing conditions. In general, a land use impact would be significant if any of the following apply to a proposed action:

- Inconsistent or in noncompliance with existing land use plans or policies
- Precludes the viability of existing land use
- Precludes continued use or occupation of an area
- Incompatible with adjacent land use to the extent that public health or safety is threatened
- Conflicts with planning criteria established to ensure the safety and protection of human life and property
- Noncompliant with requirements of the CZMA and FCMP.

3.8.3.1 PROPOSED ACTION

No impacts on land use from the additional KC-135 airframes and associated maintenance, the addition of personnel and dependents, or the proposed 33.3 percent increase in KC-135 annual

operations at Fairchild AFB would occur. The additional airframes would be kept within appropriate areas associated with the airfield or aircraft operations and maintenance. Personnel and dependents would be housed in existing residential areas both on- and off-installation. The additional aircraft operations would use existing airspace and would be consistent with the constraint areas and associated land use guidelines identified by the Fairchild AFB AICUZ Study including CZs, APZs, and noise contours.

The noise contours within the installation boundary would remain roughly the same as current noise contours. Therefore, the proposed facility construction, demolition, and renovation areas (except for the proposed fitness center addition, flight simulator addition, and flightline warehouse parking lot) would fall between the 65 and 75 dBA DNL noise contours. These buildings would be associated with aircraft operations and maintenance activities and their uses would be compatible with these noise levels. The proposed 65-dBA DNL noise contour would extend farther east and west off the installation; however, no noise sensitive land uses would fall within the extended noise contours. Therefore, noise contours that would result from the increase in operations would not result in areas of incompatible land use or impact noise-sensitive land uses on- or off-installation. **Section 3.7.3.1** includes additional information on potential operational noise impacts from the Proposed Action.

Facility construction, demolition, and renovation would have short-term, negligible, adverse and long-term, minor, beneficial impacts on land use. Adverse impacts would result from temporary increases in noise levels during construction activities; however, the associated noise levels would not result in areas of incompatible land use or preclude the viability of the existing land uses. **Section 3.7.3.1** includes additional information on potential construction noise impacts from the Proposed Action. No impacts on land use from ground disturbance in ERP sites or the PFOA and PFOS plume would occur because Fairchild AFB would adhere to the appropriate LUCs during construction, demolition, and operation. **Section 3.5.3.1** includes additional information on potential impacts from ERP sites and the PFOA and PFOS plume.

Beneficial impacts would occur because the facilities proposed for construction, renovation, and demolition would result in an efficient use of installation land and would not conflict with existing or future uses on- or off-installation. Facility construction and renovation would consolidate like functions and increase efficiency, while facility demolition would remove outdated and underused facilities. Facilities would remain in use during the renovations. Additionally, the facilities proposed for construction and renovation would be consistent with the land use categories and planning districts identified in the IDP. Although buildings with administrative uses would be constructed or renovated within existing or future aircraft operations and maintenance land uses (i.e., the proposed squadron operations facility, flight simulator addition, refueling squadron building, aircraft maintenance unit building, and the hangar bay), aircraft maintenance units and squad operations buildings with administrative functions are common within the aircraft maintenance and operations land uses on Fairchild AFB and are necessary to support these uses. Additionally, construction of the squadron operations facility would not eliminate the open space buffer between the airfield and other land uses (Fairchild AFB 2014a).

3.8.3.2 MACDILL AFB ALTERNATIVE

***Land Use*.** No impacts on land use from the additional KC-135 airframes and associated maintenance or the addition of personnel and dependents at MacDill AFB would occur. The additional airframes would be kept within appropriate areas associated with the airfield or aircraft operations and maintenance. Personnel and dependents would be housed in existing residential areas both on- and off-installation.

The proposed 50 percent increase in KC-135 annual operations at MacDill AFB could have a long-term, moderate, adverse impact on off-installation land use compatibility. Although these additional aircraft operations would use existing airspace and would not change the existing CZs or APZs, the 65 and 70 dBA DNL noise contours that would result from the proposed increase in operations would extend farther into the areas northeast and northwest of the installation. The *Tampa Comprehensive Plan* 2025 Future Land Use map depicts these areas as a mix of residential, industrial, community mixed-use, and recreational/open space (City of Tampa 2016). New residential uses would be permitted within the 65 to 69 dBA DNL noise contour; however, residential uses in these areas are discouraged. An evaluation should be conducted indicating that a community need for new residential use would not be met if development were prohibited in the area, and that there are no viable alternative locations. Residential uses would also be permitted within the 70 to 74 dBA DNL noise contour; however, residential uses in these areas are strongly discouraged and measures to achieve outdoor to indoor noise level reduction would be implemented per City of Tampa Code of Ordinances. New mobile home parks or courts would not permitted within the 65 to 74 dBA DNL noise contours under any circumstances. New industrial and community mixed-use areas would be permitted within the 65 to 74 dBA DNL noise contours; however, measures to achieve outdoor to indoor noise level reduction should be included in building designs if within the 70 to 74 dBA DNL noise contour. Parks would be permitted within the 65 to 74 dBA DNL noise contours; however, localities may have different noise level concerns or goals to consider (MacDill AFB 2008a).

The MacDill AFB Alternative would constitute a moderate increase in areas of incompatible land use outside the installation. However, the policies and objectives included in the *Tampa Comprehensive Plan* (see **Section 3.8.2.2**) would reduce the potential for future adverse impacts on land use compatibility by limiting the future development of additional noise-sensitive land uses in these areas and requiring noise attenuation measures in the development of new residential and other noise sensitive uses. No impacts from the proposed increase in KC-135 annual operations would occur on the proposed facility construction, demolition, and renovation areas or on-installation noise sensitive land uses because these areas would be outside the proposed 65 dBA DNL noise contour. **Section 3.7.3.2** includes additional information on potential operational noise impacts from the MacDill AFB Alternative.

Facility construction, demolition, and renovation would have short-term, negligible, adverse and long-term, minor, beneficial impacts on land use. Adverse impacts would result from temporary increases in noise levels during construction; however, the associated noise levels would not result in areas of incompatible land use or preclude the viability of the existing land uses. **Section 3.7.3.2** includes additional information on potential construction noise impacts from the MacDill AFB Alternative. No impacts on land use from ground disturbance in ERP sites would

occur because MacDill AFB would adhere to the appropriate LUCs during construction, demolition, and operation. **Section 3.5.3.2** includes additional information on potential impacts from ERP sites.

Beneficial impacts would occur because the facilities proposed for construction, renovation, and demolition would result in an efficient use of installation land and would not conflict with existing or future uses on- or off-installation. Facility construction and renovation would consolidate like functions and increase efficiency, while facility demolition would remove outdated and underused facilities. Facilities would remain in use during the renovations. Additionally, the facilities proposed for construction and renovation would be consistent with the land use categories and planning districts identified in the MacDill AFB IDP (MacDill AFB 2017a).

Coastal Zone Consistency Review. The MacDill AFB Alternative would be consistent with the FCMP. USAF has prepared a Federal Consistency Determination (**Appendix C**) and provided it to FDEP for their review concurrent with the Draft EA public review period. Prior to project implementation, USAF would obtain an Environmental Resource Permit, as required, to ensure consistency with the FCMP.

3.8.3.3 NO ACTION ALTERNATIVE

No impacts on land use would occur under the No Action Alternative. No facility construction, demolition, and renovation would occur, and there would be no increases in support personnel or aircraft operations. Land use conditions at Fairchild AFB and MacDill AFB would remain the same as existing conditions identified in **Sections 3.8.2.1 and 3.8.2.2**, respectively.

3.9 Safety

3.9.1 Definition of the Resource

A safe environment is one in which there is no, or an optimally reduced, potential for serious bodily injury or illness, death, or property damage. Safety addresses the well-being, safety, and health of members of the public, contractors, and USAF personnel during the various aspects of the Proposed Action and alternatives.

Safety and accident hazards can often be identified and reduced or eliminated. Necessary elements for an accident-prone situation or environment include the presence of the hazard itself together with the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the proximity of the hazard to the population. Hazardous activities can include construction, demolition, and many military activities. This EA addresses the safety implications from construction, mission, and flight operations associated with the Proposed Action and alternatives.

Construction Safety. All contractors performing construction activities on USAF installations are responsible for following federal OSHA regulations and are required to conduct these activities in a manner that does not increase risk to workers or the public. OSHA regulations address the health and safety of people at work and cover potential exposure to a wide range of chemical, physical, and biological hazards, and ergonomic stressors. The regulations are designed to control these hazards by eliminating exposure to the hazards via administrative or

engineering controls, substitution, use of personal protective equipment (PPE), and availability of Safety Data Sheets.

Occupational health and safety is the responsibility of each employer, as applicable. Employer responsibilities are to review potentially hazardous workplace conditions; monitor exposure to workplace chemical (e.g., asbestos, lead, hazardous substances), physical (e.g., noise propagation, falls), and biological (e.g., infectious waste, wildlife, poisonous plants) agents, and ergonomic stressors; and recommend and evaluate controls (e.g., prevention, administrative, engineering, PPE) to ensure exposure to personnel is eliminated or adequately controlled. Additionally employers are responsible for ensuring a medical surveillance program is in place to perform occupational health physicals for those workers subject to the use of respiratory protection, engaged in hazardous waste work, asbestos, lead, or other work requiring medical monitoring.

Mission Safety. Mission safety on USAF installations is maintained through adherence to DoD and USAF safety policies and plans. The USAF safety program ensures the safety of personnel and the public on the installation by regulating mission activities. AFI 91-202, *The USAF Mishap Prevention Program*, implements Air Force Policy Directive 91-2, *Safety Programs*, and provides guidance for implementing the safety program on all activities that occur on USAF installations.

Fairchild AFB and MacDill AFB are secure military installations with access limited to military personnel, civilian employees, military dependents, and approved visitors. Aircraft operations and maintenance activities conducted on these installations, including at the facilities utilized by KC-135s, are performed in accordance with applicable USAF safety regulations, published USAF Technical Orders, and standards prescribed by USAF occupational safety and health requirements. Adherence to industrial-type safety procedures and directives ensures safe working conditions.

Safety constraints such as explosive safety quantity-distance (ESQD) arcs and UXO probability areas (known munitions test/training areas) partially determine the suitability of areas for various land uses and, therefore, minimize safety hazards associated with mission activities. Although exposure of susceptible populations to safety hazards outside the safety constraints is unlikely, these constraints do not guarantee an absolute absence of risk. ESQD arcs are buffers around facilities that contain high-explosive munitions or flammable elements. The size and shape of an ESQD arc depends on the facility and the net explosive weight of the munitions being housed. Separations set by ESQD arcs establish the minimum distances necessary to prevent the exposure of USAF personnel and the public to potential safety hazards. USAF protects personnel from the risks associated with UXO by controlling access to areas of concern; managing programs to remove UXO; and maintaining records of expenditures, range clearance operations, explosive ordnance disposal incidents, and areas of known or suspected UXO.

Flight Safety. The primary safety concerns regarding military flights is the potential for aircraft mishaps (i.e., crashes or crash landings), including those caused by adverse weather events and bird-aircraft strikes. Aircraft mishaps are classified as A, B, C, or D. Class A mishaps are the most severe with total property damage of $2 million or more or a fatality or permanent total disability.

Restrictions on land uses are intended to protect the public from exposure to flight operations hazards. The AICUZ program is used to protect public and USAF personnel health and safety, as it relates to aircraft noise, accident potential, and the intersection with land use. Each installation's AICUZ study identifies CZs and APZs to protect the public from aircraft mishaps and noise contours to protect from aircraft noise. USAF policy requires privately owned land located within CZs to be acquired by USAF via a fee simple easement or a restrictive land easement. APZs identify areas and restrict land use where the greatest potential for aircraft accidents exist.

Bird and wildlife strikes are a flight safety concern due to the potential damage that a strike might have on the aircraft or injury to aircrews. AFI 91-202 establishes mishap prevention program requirements (including those for BASH), assigns responsibilities for program elements, and contains program management information.

3.9.2 Affected Environment

3.9.2.1 FAIRCHILD AFB

Construction Safety. Construction contractors at Fairchild AFB follow standard OSHA and USAF safety practices as discussed in **Section 3.9.1**.

Mission Safety. ESQD arcs cover a substantial portion of Fairchild AFB, primarily on land already undevelopable because of its location within primary airfield surfaces or CZs. Fairchild AFB aggressively manages its development program to ensure that it meets explosive safety requirements (Fairchild AFB 2014a).

The 92d Civil Engineering Squadron Fire and Emergency Services Flight provides 24-hour crash, structural, and emergency medical first response; technical rescue; hazardous material and weapons-of-mass-destruction incident response; and fire prevention, safety, and training/education services to Fairchild AFB.

Flight Safety. Fairchild AFB has established easements for all off-installation land within the CZs at both ends of the installation's runway. Currently, no incompatible developments are located within Fairchild AFB's CZs; however, incompatible developments do exist within the APZs. Portions of a 168.8-acre surface mining operation, located 1 mile east of the installation, are within the APZs, including 23.1 acres within APZ I and 99.4 acres within APZ II. There are also approximately 23.8 acres of residential developments east of the installation in APZ II. These developments were constructed prior to DoD's creation of the AICUZ program to address encroachments. A total of 146.3 acres of developed land, or 17 percent of the APZs (825.8 acres), have incompatible uses (Fairchild AFB 2014a).

Spokane County has implemented AOZs to reduce the potential for airport hazards that apply to all four airfields in the county including Fairchild AFB, as presented in **Section 3.8.2.1**. The AOZ program is similar in design and intent to the DoD's AICUZ program. The AOZ establishes guidelines for development around the four designated airfields and has a process for how applications for development are handled.

Three total Class A aircraft mishaps involving KC-135s have occurred on or near Fairchild AFB in 1962, 1967, and 1987. A fourth Class A mishap occurred on the installation in 1994, when a

B-52 assigned to Fairchild AFB crashed near the runway as a result of pilot error while rehearsing maneuvers for an air show (ASN 2018a).

The Spokane, Washington, area receives approximately 4 feet of snow and has several months of freezing temperatures every year (U.S. Climate Data 2018). Therefore, deicing aircraft is essential to maintaining operational success and personnel safety on Fairchild AFB. The 92d Logistics Readiness Squadron stores the installation's current deicing fluid volume requirement in four 12,000-gallon tanks. Deicing fluid storage tanks are located adjacent to the jet fuel bulk storage area.

Fairchild AFB Instruction 13-201, *Airfield Operations Instruction*, and the *92d Air Refueling Wing Bird Aircraft Strike Hazard (BASH) Reduction Plan*, which is implemented in two phases, provides specific guidance and assigns responsibilities in developing an effective bird strike hazard reduction program for the Fairchild AFB local flying area. Phase I concentrates on bird control and dispersal and is in effect year round. Phase II, which concentrates on bird avoidance through scheduling and airfield operating restrictions, is typically implemented during the spring and fall seasonal migration periods (i.e., May through October; when the potential for and frequency of bird strikes is greatest). Historical bird strike data provide the basis for when Phase II is to be implemented. The 92d ARW implements and terminates Phase II upon notification from 92d ARW Flight Safety that the bird hazard has significantly increased or decreased during the period of implementation of Phase I (Fairchild AFB 2010).

Most bird strikes at Fairchild AFB occur between May and October, and the majority occur in the traffic pattern. Between 2002 and 2007, the 92d ARW experienced an average low of less than one strike in January to more than nine in September. Gulls, hawks, ducks, and geese are the bird species most commonly involved in wildlife aircraft strikes at Fairchild AFB. The nearest migration route passes west of Fairchild AFB. Coyotes and deer are the most common mammal species involved in terrestrial wildlife aircraft strikes on the installation (Fairchild AFB 2010).

3.9.2.2 MACDILL AFB

Construction Safety. Construction contractors at MacDill AFB follow standard OSHA and USAF safety practices as discussed in **Section 3.9.1**.

Mission Safety. ESQD arcs cover a substantial portion of the airfield and a small tract of land south of the airfield surrounding the munitions storage area. However, there are not many munitions stored at the installation nor are the munitions highly explosive. Most of the land that is encompassed by ESQD arcs is undevelopable because of its location on the airfield or its designation as a wetland (MacDill AFB 2017a).

The 6th Civil Engineer Squadron Fire Emergency Services Flight provides fire and emergency services on MacDill AFB. In March 2017, MacDill AFB became the first USAF installation to partner with a local government to provide advanced life support and transportation services. While the installation has a clinic, serious medical situations require services that Tampa Fire Rescue is trained to provide. The agreement was designed to ensure that the installation meets the Pentagon rule requiring response times within 12 minutes. MacDill AFB opened a new ambulance bay and bunkhouse to house Tampa Fire Rescue personnel and a dedicated

ambulance. Tampa Fire Rescue provides eight personnel during the three shifts it operates each day at the installation (Altman 2017).

Flight Safety. There are approximately 738 acres of off-installation land area in the MacDill AFB CZs and APZs. Of that acreage, 268 acres are recreational, open space, agriculture or low density; 429 acres are residential; 15 acres are commercial; 5 acres are industrial; and 21 acres are public or quasi-public. The City of Tampa has included the installation's AICUZ data and recommendations in its comprehensive planning and zoning process since the late 1980s (MacDill AFB 2017a).

No Class A aircraft mishaps involving KC-135s have occurred on or near MacDill AFB. One Class A mishap occurred on the installation in 2012 when a Canadian Armed Forces CC-144A Challenger 600 jet suffered a bird strike while on approach (ASN 2018b).

MacDill AFB Instruction 91-212, *Bird Aircraft Strike Hazard Program*, provides guidance for reducing the incidents of bird strikes in and around areas where MacDill AFB flying operations occur. The plan establishes provisions to disperse information on specific bird hazards and procedures for reporting hazardous bird activity. As a tropical, coastal installation, bird strikes at MacDill AFB is a substantial concern. The installation has a 5-year Memorandum of Understanding with the U.S. Department of Agriculture for bird and wildlife control at the installation. Bird populations at the installation spike during late fall and early spring in conjunction with migratory patterns (MacDill AFB 2017a).

3.9.3 Environmental Consequences

Any increase in safety risks is considered an adverse impact on safety. Significant impacts on safety would occur if the Proposed Action or MacDill AFB Alternative does either of the following:

- Substantially increase risks associated with the safety of USAF personnel or the general public.
- Introduce a new safety risk for which USAF is not prepared or does not have adequate management and response plans in place.

3.9.3.1 PROPOSED ACTION

Construction Safety. Short-term, minor, adverse impacts on contractor health and safety would occur during facility construction, demolition, and renovation associated with the Proposed Action. Contractors performing construction work would be exposed to an environment containing slightly greater health and safety risks than a non-construction environment. To minimize health and safety risks, construction contractors would be required to use appropriate PPE and establish and maintain site-specific health and safety programs for their employees. Contractor health and safety programs would follow all applicable federal OSHA regulations, and would be reviewed by Fairchild AFB personnel prior to work beginning to ensure that appropriate measures are taken to reduce the potential exposure of workers and installation personnel to health and safety risks. Safety Data Sheets for all hazardous materials and chemicals stored at the worksite would be kept on site and be available for immediate review.

As discussed in **Section 3.5.3.1**, some of the proposed facility construction, demolition, and renovation would occur within active ERP sites. Prior to the start of any construction and demolition, contractors would coordinate with the Fairchild AFB ERP office to ensure that these sites do not present safety hazards to construction workers.

Mission and Flight Safety. Long-term, negligible, adverse impacts on health and safety are anticipated from the increased KC-135 operations at Fairchild AFB. Impacts from adding 12 KC-135s and increasing total annual flight operations at the installation by approximately 16 percent would be negligible because airfield and airspace operations would continue to follow all applicable safety guidelines and regulations. The proposed increase in aircraft operations would not be expected to increase the risk of Class A mishaps. As presented in **Section 3.9.2.1**, aircraft mishaps are rare at the installation and the number would not be expected to increase from the Proposed Action. All aircraft flight operations would continue to be conducted in accordance with standard flight rules and local operating procedures and policies.

The proposed increase in aircraft operations would result in an increased potential for bird or wildlife strikes. However, the overall potential for bird/wildlife-aircraft strikes is not expected to be significantly greater than current levels because all safety programs in place for existing KC-135 operations would continue and flight operations would be similar to those currently conducted at the installation. The new air refueling squadron would follow the 92d ARW BASH Plan and incorporate the use of existing bird avoidance technologies and practices to minimize the potential for bird/wildlife-aircraft strikes. Additionally, during periods of increased potential for bird/wildlife strikes, such as the migratory bird season, 92d ARW would institute limits on low-altitude flight and some types of training activities (e.g., multiple approaches, closed-pattern pattern work) at the airfield and local airspace environments. Special briefings would also continue to be provided to pilots when the potential for bird strikes within the airspace is high.

3.9.3.2 MACDILL AFB ALTERNATIVE

Construction Safety. Short-term, minor, adverse impacts on contractor health and safety would occur during facility construction, demolition, and renovation associated with the MacDill AFB Alternative. Contractors performing construction work would be exposed to an environment containing slightly greater health and safety risks than a non-construction environment. To minimize health and safety risks, construction contractors would be required to use appropriate PPE and establish and maintain site-specific health and safety programs for their employees. Contractor health and safety programs would follow all applicable federal OSHA regulations, and would be reviewed by MacDill AFB personnel prior to work beginning to ensure that appropriate measures are taken to reduce the potential exposure of workers and installation personnel to health and safety risks. Safety Data Sheets for all hazardous materials and chemicals stored at the worksite would be kept on site and be available for immediate review.

As discussed in **Section 3.5.3.2**, some of the proposed facility construction, demolition, and renovation would occur within active ERP sites. Prior to the start of any construction and demolition, contractors would coordinate with the MacDill AFB ERP office to ensure that these sites do not present safety hazards to construction workers.

Mission and Flight Safety. Long-term, negligible, adverse impacts on health and safety are anticipated from the increased KC-135 operations at MacDill AFB. Impacts from adding 12 KC-135s and increasing total annual flight operations by approximately 29 percent would be negligible because airfield and airspace operations would continue to follow all applicable safety guidelines and regulations. The proposed increase in aircraft operations would not be expected to increase the risk of Class A mishaps. As presented in **Section 3.9.2.2**, aircraft mishaps are rare at the installation and the number would not be expected to increase from the MacDill AFB Alternative. All aircraft flight operations would continue to be conducted in accordance with standard flight rules and local operating procedures and policies.

The proposed increase in aircraft operations would result in an increased potential for bird or wildlife strikes. However, the overall potential for bird/wildlife-aircraft strikes is not expected to be significantly greater than current levels because all safety programs in place for existing KC-135 operations would continue and flight operations would be similar to those currently conducted at the installation. The new air refueling squadron would follow the MacDill AFB BASH Plan and incorporate the use of existing bird avoidance technologies and practices to minimize the potential for bird/wildlife-aircraft strikes.

3.9.3.3 NO ACTION ALTERNATIVE

The No Action Alternative would not impact safety. No facility construction, demolition, or renovation would occur, and there would be no changes in aircraft operations. Construction, mission, and flight safety conditions at both installations would remain unchanged when compared to existing conditions identified in **Sections 3.9.2.1** and **3.9.2.2**.

3.10 Socioeconomics

3.10.1 Definition of the Resource

Socioeconomics encompasses economies and social elements such as population levels and economic activity. Factors that describe the socioeconomic environment represent a composite of several interrelated and nonrelated attributes. Indicators of economic conditions for a geographic area include demographics, median household income, unemployment rates, employment, and housing data. Data on employment identify employment by industry or trade and unemployment trends. Data on personal income in a region are used to compare the before and after effects of any jobs created or lost as a result of a proposed action. Data on industrial, commercial, and other sectors of the economy provide baseline information about the economic health of a region. Changes in demographic and economic conditions are typically accompanied by changes in other community components, such as housing availability, education, and the provision of installation and public services, which are also discussed in this section.

For the purpose of this analysis, the socioeconomics region of influence (ROI) includes the areas near Fairchild AFB or MacDill AFB within which potential impacts from the Proposed Action or the MacDill AFB Alternative, respectively, could occur. The ROI is the county where each installation is located.

3.10.2 Affected Environment

3.10.2.1 FAIRCHILD AFB

The socioeconomics ROI for the Proposed Action is Spokane County. Data for the Spokane-Spokane Valley, Washington Metropolitan Statistical Area (MSA) and the State of Washington are provided for additional information and areas of comparison.

Population. The U.S. Census Bureau estimated the population of Spokane County in 2016 was 485,859, which represents a 16.3 percent increase since 2000. The population of the Spokane-Spokane Valley, Washington MSA increased at a slightly lower percentage (15.5 percent) than Spokane County from 2000 to 2016, while Washington had a greater percentage increase (20.0 percent) (U.S. Census Bureau 2010b, U.S. Census Bureau 2016b). **Table 3-28** shows the total populations for 2000 and 2010, and total population estimates for 2016.

Table 3-28. Total Population in the Vicinity of Fairchild AFB

Geographic Area	2000	2010	2016 [a]	Percent Change (2000-2016)
Spokane County	417,939	471,221	485,859	16.3
Spokane-Spokane Valley, WA MSA	469,737 [b]	527,753 [b]	542,604	15.5
Washington	5,894,121	6,724,540	7,073,146	20.0

Sources: U.S. Census Bureau 2000, U.S. Census Bureau 2010b, U.S. Census Bureau 2016b

Notes:

[a.] The 2016 total population data are estimates from the 2012-2016 American Community Survey.

[b.] The Spokane-Spokane Valley, Washington MSA consists of Pend Oreille, Spokane, and Stevens Counties in Washington. This MSA did not exist during the 2000 and 2010 Censuses; therefore, the total population for the MSA in 2000 and 2010 was calculated by adding the individual 2000 and 2010 populations of the three counties.

The current workforce population of Fairchild AFB is 7,565, including military and civilian personnel and dependents. Total employment at Fairchild AFB consists of 5,248 personnel, including 2,875 full-time military personnel, 957 part-time Guardsmen, 577 government civilian personnel, and 839 other installation personnel. The installation supports 2,317 dependents (AMC 2016). Additionally, Fairchild AFB supports 13,000 retirees living within 130 miles of the installation, and 18,000 retirees in the greater inland northwest area of eastern Washington, northern Idaho, and western Montana (Fairchild AFB 2014a).

Economic Activity (Employment and Earnings). In 2016, the percentage of persons in the armed forces in the Spokane County labor force was 1.1 percent. Persons in the armed forces made up similar percentages of the labor forces of the Spokane-Spokane Valley, Washington MSA and Washington (see **Table 3-29**) (U.S. Census Bureau 2016c).

Table 3-29 shows the regional employment by industry near Fairchild AFB. The total number of employed people in the civilian labor force in Spokane County in 2016 was 215,413. The industry employing the highest percentage of the civilian labor force in Spokane County; Spokane-Spokane Valley, Washington MSA; and Washington was the educational services, and health care and social assistance industry. This industry employed more than 25 percent of the labor force in Spokane County and the Spokane-Spokane Valley, Washington MSA, but slightly less of the labor force in Washington (U.S. Census Bureau 2016c). The top private employers in Spokane County are Providence Healthcare, Kalispel Tribal Economic

Table 3-29. Employment by Industry in the Vicinity of Fairchild AFB

	Spokane County	Spokane-Spokane Valley, WA MSA	Washington
Population 16 years and over in the labor force	234,727	257,217	3,623,304
Percent of labor force in the Armed Forces	1.1%	1.0%	1.3%
Population of employed persons in the civilian labor force	215,413	235,879	3,331,321
Percent Employed Persons in Civilian Labor Force (by Industry)			
Agriculture, forestry, fishing and hunting, and mining	1.1%	1.5%	2.7%
Construction	5.6%	5.9%	6.1%
Manufacturing	8.4%	8.6%	10.5%
Wholesale Trade	3.5%	3.3%	2.9%
Retail Trade	12.7%	12.7%	11.8%
Transportation and warehousing, and utilities	4.8%	4.9%	5.2%
Information	1.7%	1.6%	2.3%
Finance and insurance, and real estate and rental and leasing	6.8%	6.5%	5.4%
Professional, scientific, and management, and administrative and waste management services	9.4%	9.2%	12.5%
Educational services, and health care and social assistance	25.9%	25.6%	21.4%
Arts, entertainment, and recreation, and accommodation and food services	10.1%	10.0%	9.2%
Other services, except public administration	5.1%	5.1%	4.7%
Public administration	5.0%	5.2%	5.3%

Source: U.S. Census Bureau 2016c
Note: The data presented in this table are estimates from the 2012–2016 American Community Survey.

Authority/Northern Quest Resort and Casino, and Wal-Mart Stores Inc., while the top public employers are Fairchild AFB, State of Washington, and Spokane Public Schools (GSI 2017).

The total economic impact of Fairchild AFB during FY 2015 was approximately $420 million. This includes payroll for military and civilian personnel of more than $232 million, creation of 2,314 jobs with an estimated value of approximately $100 million, and local expenditures of approximately $88 million (Fairchild AFB 2015b).

The per capita income in Spokane County; Spokane-Spokane Valley, Washington MSA; and Washington was $26,860, $26,463, and $32,999, respectively (U.S. Census Bureau 2016c).

As of December 2017, the unemployment rate (not seasonally adjusted) in Spokane County; Spokane-Spokane Valley, Washington MSA; and Washington was 5.7 percent, 5.9 percent, and 4.9 percent, respectively (BLS 2018).

Housing. Three housing options are available for Fairchild AFB personnel, including on-installation privatized military family housing and unaccompanied housing, and off-installation housing.

According to USAF, Fairchild AFB has 641 privatized military family housing units located in four neighborhoods on the installation with a current occupancy rate of 98 to 99 percent. There are 10 on-installation dormitories with 472 total rooms for unaccompanied personnel (Fairchild AFB 2014a). In June 2018, Fairchild AFB's dormitory occupancy rate was 95 percent, and a building currently used for billeting could be converted into a dormitory to provide additional unaccompanied housing, if needed (Lohman 2018).

The U.S. Census Bureau estimated there were 207,008 housing units in Spokane County in 2016, of which approximately 15,800 units were vacant. The Spokane-Spokane Valley, Washington MSA, which includes Spokane County, had 236,197 total housing units of which 22,124 were vacant. The homeowner vacancy rates in Spokane County and Spokane-Spokane Valley, Washington MSA were 1.6 percent and 1.8 percent, respectively, while the rental vacancy rates were 4.9 percent and 5.0 percent, respectively (U.S. Census Bureau 2016d).

Education. Spokane County is within Washington State Educational Service District 101, and includes all or part of 18 school districts. Five school districts are within approximately 5 miles of Fairchild AFB, including Medical Lake (5 schools), Cheney (10 schools), Reardan-Edwall (2 schools), Great Northern (1 school), and Spokane (47 schools). Additionally, there are 3 private schools in the Reardan-Edwall School District with 99 total students, and 17 private schools within Spokane Public Schools district boundaries with 3,818 total students (OSPI 2018a). Spokane Public Schools is the largest of these districts with 30,828 students in pre-kindergarten through grade 12 during the 2017–2018 school year (OSPI 2018a). Fairchild AFB is within Medical Lake School District. During the 2017–2018 school year, the district's total student enrollment was 1,895 students. The district has two elementary schools, including Michael Anderson Elementary School on Fairchild AFB; one middle school; one high school; and one alternative high school. Michael Anderson Elementary School serves pre-kindergarten through grade 5, and as of January 2018 had a total of 434 students (OSPI 2018a).

Installation and Public Services. Law enforcement services (police) at Fairchild AFB are provided by the 92d Security Forces Squadron, and fire protection and emergency services through the 92d Civil Engineer Squadron (Fairchild AFB Fire Department). The fire department also assists with emergencies in the surrounding community. The 92d Medical Group operates the outpatient medical treatment facility (clinics) at Fairchild AFB for active-duty personnel, dependents, and retirees. The 92d Medical Group offers primary/family health care, pediatrics, flight medicine, dental, pharmacy, physical therapy, and mental health, and laboratory services, as well as 24-hour ambulance service on the installation (Fairchild AFB 2014a). Other installation services are under the direction of the 92d Force Support Squadron, including operation of two on-installation dining facilities and a fitness/aquatic center, and provision community and family support services to installation personnel.

Public services in Spokane County consist of law enforcement, fire protection, emergency medical services, and medical services. The Spokane County Sheriff's Office provides law enforcement services for the county and has civil and patrol divisions, as well as an air support

unit. Other law enforcement agencies in the area include the City of Airway Heights Police Department. Spokane County contains 11 fire districts and 7 municipal fire departments, including the cities of Airway Heights, Medical Lake, and Spokane, which provide fire protection services in the county (Spokane County 2016). Additionally, Spokane International Airport has a fire department. Emergency medical services are provided by the county fire districts and municipal fire departments, as well as a few private entities. There are eight hospitals in Spokane County (Spokane Cares 2018). The closest emergency rooms to Fairchild AFB are at Providence Sacred Heart Medical Center and Deaconess Medical Center in Spokane, which are approximately 11 to 12 miles from the installation.

3.10.2.2 MACDILL AFB

The socioeconomics ROI for the MacDill AFB Alternative is Hillsborough County. Data for the Tampa-St. Petersburg-Clearwater, Florida MSA and the State of Florida are provided for additional information and areas of comparison.

Population. The U.S. Census Bureau estimated the population of Hillsborough County in 2016 was 998,948, which represents a 32.4 percent increase since 2000. During this time, the populations of the Tampa-St. Petersburg-Clearwater, Florida MSA and Florida also increased, but at lower percentages (22.2 percent and 24.7 percent, respectively) than Hillsborough County (U.S. Census Bureau 2010b, U.S. Census Bureau 2012, U.S. Census Bureau 2016b). **Table 3-30** shows the total populations for 2000 and 2010, and total population estimates for 2016.

Table 3-30. Total Population in the Vicinity of MacDill AFB

Geographic Area	2000	2010	2016 [a]	Percent Change (2000-2016)
Hillsborough County	998,948	1,229,226	1,323,059	32.4
Tampa-St. Petersburg-Clearwater, FL MSA	2,395,997	2,783,243	2,927,714	22.2
Florida	15,982,378	18,801,310	19,934,451	24.7

Sources: U.S. Census Bureau 2000, U.S. Census Bureau 2010b, U.S. Census Bureau 2012, U.S. Census Bureau 2016b

Note: [a] The 2016 total population data are estimates from the 2012–2016 American Community Survey.

The current workforce population of MacDill AFB is 42,023, including military and civilian personnel and dependents. There are approximately 18,853 military and civilian personnel employed at MacDill AFB consisting of 9,885 active-duty personnel, 5,224 Non-Extended Active Duty/Air National Guard/Reserve, and 3,744 civilians. The installation supports 23,170 dependents. Additionally, MacDill AFB supports more than 73,000 retirees and spouses of military retirees residing within 50 miles of the installation (MacDill AFB 2014).

Economic Activity (Employment and Earnings). In 2016, the percentage of persons in the armed forces in Hillsborough County labor force was 0.8 percent. Persons in the armed forces made up similar percentages of the labor forces of the Tampa-St. Petersburg-Clearwater, Florida, MSA (0.5 percent) and Florida (0.6 percent) (see **Table 3-31**) (U.S. Census Bureau 2016c).

Table 3-31. Employment by Industry in the Vicinity of MacDill AFB

	Hillsborough County	Tampa-St. Petersburg-Clearwater, FL MSA	Florida
Population 16 years and over in the labor force	686,086	1,430,907	9,613,594
Percent of labor force in the Armed Forces	0.8%	0.5%	0.6%
Population of employed persons in the civilian labor force	627,149	1,311,353	8,755,427
Percent Employed Persons in Civilian Labor Force (by Industry)			
Agriculture, forestry, fishing and hunting, and mining	1.3%	0.9%	1.1%
Construction	6.7%	6.4%	6.8%
Manufacturing	5.0%	5.7%	5.2%
Wholesale Trade	2.9%	2.7%	2.8%
Retail Trade	11.9%	12.9%	13.3%
Transportation and warehousing, and utilities	4.6%	4.4%	5.1%
Information	2.5%	2.3%	2.0%
Finance and insurance, and real estate and rental and leasing	10.4%	9.6%	7.7%
Professional, scientific, and management, and administrative and waste management services	14.2%	13.7%	12.8%
Educational services, and health care and social assistance	21.7%	22.4%	21.1%
Arts, entertainment, and recreation, and accommodation and food services	10.2%	10.4%	12.3%
Other services, except public administration	4.6%	4.8%	5.3%
Public administration	4.0%	4.0%	4.5%

Source: U.S. Census Bureau 2016c
Note: The data presented in this table are estimates from the 2012–2016 American Community Survey.

Table 3-31 shows the regional employment by industry in the vicinity of MacDill AFB. The total number of employed people in the civilian labor force in Hillsborough County in 2016 was 627,149. The industry employing the highest percentage of the civilian labor force in Hillsborough County; the Tampa-St. Petersburg-Clearwater, Florida, MSA; and Florida was educational services, and health care and social assistance industry. This industry employed the similar percentages of the labor force in each of these areas, between 21.1 and 22.4 percent. The top private employers in Hillsborough County are HCA West Florida (hospital network), Tampa International Airport, and Tampa General Hospital, while the top public employers are School District of Hillsborough County, MacDill AFB, and Hillsborough County Government (Suncoast Jobs 2018).

The total economic impact of MacDill AFB during FY 2014 was approximately $2.9 billion. This includes payroll for military and civilian personnel of more than $1 billion, creation of approximately 24,500 jobs with an estimated value of approximately $1.1 billion, and local expenditures of approximately $1.8 billion (MacDill AFB 2014).

The per capita income in Hillsborough County; Tampa-St. Petersburg-Clearwater, Florida MSA; and Florida was $28,727, $28,504, and $27,598, respectively (U.S. Census Bureau 2016c).

As of December 2017, the unemployment rate (not seasonally adjusted) in Hillsborough County; Tampa-St. Petersburg-Clearwater, Florida MSA; and Florida was 3.3 percent, 3.4 percent, and 3.7 percent, respectively (BLS 2018).

Housing. Three housing options are available for MacDill AFB personnel, including on-installation privatized military family housing and unaccompanied housing, and off-installation housing.

MacDill AFB has 572 privatized military family housing units located in five neighborhoods on the installation with a current occupancy rate of 98 percent. There are five on-installation dormitories with 375 beds for unaccompanied personnel. The dormitory occupancy rate is 97 percent (MacDill AFB 2017a).

The U.S. Census Bureau estimated there were 554,762 housing units in Hillsborough County in 2016, of which approximately 59,000 were vacant. The Tampa-St. Petersburg-Clearwater, Florida MSA, which includes Hillsborough County, had 1,376,984 total housing units of which 215,145 were vacant. The homeowner vacancy rates in Hillsborough County and Tampa-St. Petersburg-Clearwater, Florida MSA were 2.0 percent and 2.6 percent, respectively, while the rental vacancy rates were 6.9 percent and 7.1 percent, respectively (U.S. Census Bureau 2016d).

Education. The School District of Hillsborough County has 151 elementary schools, 50 middle schools, 33 senior high schools, and 31 combination schools (Florida DOE 2017). In the 2017-2018 school year, the total student enrollment (pre-kindergarten through grade 12) was 217,072 students (Florida DOE 2018). Public school options for children living on MacDill AFB include Tinker K-8 School, which is on-installation, and Robinson High School. Both of these schools are part of the School District of Hillsborough County. In the 2017-2018 school year, Tinker K-8 School had 723 students and Robinson High School had 1,637 students (Florida DOE 2018).

Installation and Public Services. Law enforcement services (police) at MacDill AFB are provided by the 6th Security Forces Squadron, and fire protection and rescue services through the 6th Civil Engineer Squadron, which is part of the 6th Mission Support Group. The 6th Medical Group operates the medical clinic at MacDill AFB and a satellite clinic (Brandon Clinic) in Brandon, Florida, for active-duty personnel, dependents, and retirees. The 6th Medical Group offers primary/family health care, pediatrics, general surgery, flight medicine, dental, pharmacy, physical therapy, and mental health, and laboratory services (6th Medical Group 2017). Tampa Fire and Rescue provides 24-hour ambulance service on the installation. Other installation services are under the direction of the 6th Force Support Squadron, including operation of a dining facility and other on-installation dining establishments and a fitness center and other recreational facilities, and provision community and family support services to installation personnel.

Public services in Hillsborough County consist of law enforcement, fire protection, emergency medical services, and medical services. The Tampa Police Department provides law enforcement services for the City of Tampa and has criminal investigations, special operations,

and support services divisions. Other law enforcement agencies in the area include the Hillsborough County Sheriff's Office. Tampa Fire Rescue provides fire prevention, fire protection, fire suppression, and emergency medical services as well as hazardous materials response, aircraft rescue, and marine firefighting. There are several hospitals in the Tampa Bay region. The closest emergency room to MacDill AFB is at Memorial Hospital of Tampa, which is approximately 5.5 miles from the installation.

3.10.3 Environmental Consequences

Socioeconomic impacts are assessed in terms of direct impacts on the local economy and related impacts on other socioeconomic resources (e.g., housing). The magnitude of potential impacts can vary greatly, depending on the location of a proposed action. A proposed action could have a significant impact with respect to the socioeconomic conditions if it were to result in at least one of the following:

- Substantial change in the local or regional economy, employment, or business volume
- Substantial change in the local or regional population; and in housing, education, installation services, or public services from the increased or decreased demands of the population change.

3.10.3.1 PROPOSED ACTION

Short-term, minor, beneficial impacts on the local economy would occur from the proposed facility construction, demolition, and renovation at Fairchild AFB. These activities would stimulate the local economy through the employment of construction workers and the purchase of construction-related materials and other goods and services, as well as secondary purchases of goods and services. Due to the short-term nature of construction, the economic benefits would be temporary. According to USAF, it is estimated that approximately $73 million in military construction and facility sustainment, restoration, and modernization expenditures would occur from FY 2019 through FY 2021 due to the Proposed Action. The proposed construction and associated expenditures could generate additional jobs, most likely in the construction industry, but also in other industries, such as retail, that would generate additional indirect and induced income in Spokane County. In 2016, Spokane County had a civilian labor force of 232,211 people, including 12,020 people employed in the construction industry (U.S. Census Bureau 2016c). It is expected that the local labor force would be sufficient to meet the demand for new jobs in the construction and other industries without a migration of workers into the area. Therefore, no impacts on population would occur during construction of the Proposed Action because it is expected that all construction workers would be from the local or regional area.

Long-term, negligible, beneficial impacts on the local economy would occur from the increase of personnel and dependents stationed at Fairchild AFB. The Proposed Action would result in an increase of installation personnel (i.e., jobs) by 7.1 percent (370 personnel) and of installation population by 12.8 percent (970 people, including 369 active duty military personnel and their 600 dependents, and 1 civilian personnel). Assuming the one civilian personnel would be from Spokane County, the Proposed Action would potentially increase the 2016 Spokane County population by 0.2 percent (969 people). The increase of jobs at Fairchild AFB and the associated expansion of the installation and county populations would result in increased sales volumes due to more purchases of goods and services (e.g., retail, restaurants, hospitals) in the

local community. These increases could in turn generate indirect and induced jobs in affected industries, resulting in long-term, beneficial impacts on the local economy. With a December 2017 unemployment rate of 5.7 percent in Spokane County amounting to approximately 13,800 unemployed people (BLS 2018), it is expected that the local labor force would be able to fill these new secondary jobs without a migration of workers into the area.

The Proposed Action would include an increase of 369 active duty military personnel and 600 dependents that would require housing. Assuming that each restationed personnel would require one housing unit, the demand for housing within Spokane County, either on- or off-installation, would increase by approximately 369 units. All unaccompanied USAF personnel in the ranks of E-1 to E-4 with less than 3 years of service would be housed in dormitories at Fairchild AFB. Fairchild AFB has approximately 20 dormitory rooms available as of June 2018, and a building currently used for billeting could be converted into a dormitory, if needed. The remainder of the personnel would be housed on- or off-installation. Based on the off-installation homeowner and rental vacancy rates of 1.6 percent and 4.9 percent, respectively, and approximately 15,800 vacant off-installation housing units in Spokane County, and the current and projected inventories of on-installation housing and dormitories, there would be sufficient capacity to accommodate the 369 active duty military personnel and their dependents that would be stationed at Fairchild AFB as part of the Proposed Action. No impacts on housing would occur during construction because it is expected that all construction workers would be from the local or regional area. The Proposed Action would have a negligible impact on housing.

Using the assumption that 1.5 times 65 percent of active duty military personnel are school-age dependents and all attend public schools, there would be an increase of approximately 360 students. If it is assumed that all 360 of the estimated incoming students attend either Spokane Public Schools or Medical Lake School District, it would represent a 1.2 percent or 19.0 percent increase of the current total enrollment of each district, respectively. However, the incoming students would be of varying ages and would be expected to live in different parts of Spokane County and, therefore, attend public schools in various school districts and private schools. Based on the number of school districts and schools in Spokane County, it is anticipated that the existing schools in the county would have sufficient capacity to support the incoming student population. Therefore, it is unlikely that the increase in the population of school-age children would result in adverse impacts on education.

Although the Proposed Action would result in a small increase of the population of Fairchild AFB and Spokane County, it is anticipated that installation and public services could accommodate the increase of people. The change in population would slightly increase demand for installation and public services, but is not expected to adversely affect off- or on-installation law enforcement, fire protection, emergency medical services, and medical services. The Proposed Action includes the construction of an addition and renovations to the fitness center to accommodate the increased installation population.

3.10.3.2 MACDILL AFB ALTERNATIVE

Short-term, minor, beneficial impacts on the local economy would occur from the proposed facility construction, demolition, and renovation at MacDill AFB. These activities would stimulate

the local economy through the employment of construction workers and the purchase of construction-related materials and other goods and services, as well as secondary purchases of goods and services. Due to the short-term nature of construction activities, the economic benefits would be temporary. According to USAF, approximately $81 million in military construction and facility sustainment, restoration, and modernization expenditures would occur from FY 2019 through FY 2021 because of the MacDill AFB Alternative. The proposed construction activities and associated expenditures could generate additional jobs, most likely in the construction industry, but also in other industries, such as retail, that would generate additional indirect and induced income in Hillsborough County. In 2016, Hillsborough County had a civilian labor force of 680,902 people, including 42,059 people employed in the construction industry (U.S. Census Bureau 2016c). It is expected that the local labor force would be sufficient to meet the demand for new jobs in the construction and other industries without a migration of workers into the area. Therefore, no impacts on population would occur during construction of the MacDill AFB Alternative because it is expected that all construction workers would be from the local or regional area.

Long-term, negligible, beneficial impacts on the local economy would occur from the increase of personnel and dependents stationed at MacDill AFB. The MacDill AFB Alternative would result in an increase of installation personnel (i.e., jobs) by 2.1 percent (395 personnel) and of installation population by 2.5 percent (1,035 people, including 394 active duty military personnel and their 640 dependents, and 1 civilian personnel). Assuming the one civilian personnel would be from Hillsborough County, the MacDill AFB Alternative would potentially increase the 2016 Hillsborough County population by 0.08 percent (1,034 people). The increase of jobs at MacDill AFB and the associated expansion of the installation and county populations would result in increased sales volumes due to more purchases of goods and services (e.g., retail, restaurants, hospitals) in the local community. These increases would in turn generate indirect and induced jobs in affected industries, resulting in long-term, beneficial impacts on the local economy. With a December 2017 unemployment rate of 3.3 percent in Hillsborough County amounting to approximately 24,100 unemployed people (BLS 2018), it is expected that the local labor force would be able to fill these new secondary jobs without a migration of workers into the area.

The MacDill AFB Alternative would include an increase of 394 active duty military personnel and 640 dependents that would require housing. Assuming that each restationed personnel would require one housing unit, the demand for housing within Hillsborough County, either on- or off-installation, would increase by approximately 394 units. All unaccompanied USAF personnel in the ranks of E-1 to E-4 with less than 3 years of service would be housed in dormitories at MacDill AFB. The MacDill AFB Alternative includes the proposed renovation of Building 378 to provide 68 new dormitory rooms for these added personnel. The remainder of the personnel would be housed on- or off-installation. The off-installation homeowner and rental vacancy rates are 2.0 percent and 6.9 percent, respectively. In addition, there are approximately 59,000 vacant off-installation housing units in Hillsborough County, and there is availability in the current and projected inventories of on-installation housing and dormitories. Therefore, sufficient capacity is available to accommodate the 394 active duty military personnel and their dependents that would be stationed at MacDill AFB as part of the MacDill AFB Alternative. No impacts on housing would occur during construction because it is expected that all construction

workers would be from the local or regional area. The MacDill AFB Alternative would be a negligible impact on housing.

Using the assumption that 1.5 times 65 percent of active duty military personnel are school-age dependents and all attend public schools, there would be an increase of approximately 384 students, which represents a 0.2 percent increase of the School District of Hillsborough County student enrollment. However, the incoming students would be of varying ages and would be expected to live in different parts of Hillsborough County and, therefore, attend various public schools and private schools. A 0.2 percent increase in school enrollment would be readily absorbed into the local elementary and secondary schools, and it is anticipated that the existing schools in the county would have sufficient capacity to support the incoming student population. Therefore, it is unlikely that the increase in the population of school-age children would result in adverse impacts on education.

Although the MacDill AFB Alternative would result in a small increase of the population of MacDill AFB and Hillsborough County, it is anticipated that installation and public services could accommodate the increase of people. The change in population would slightly increase demand for installation and public services, but is not expected to adversely affect off- or on-installation law enforcement, fire protection, emergency medical services, and medical services. The MacDill AFB Alternative includes the construction of an addition onto the fitness center to accommodate the increased installation population.

3.10.3.3 NO ACTION ALTERNATIVE

Impacts on socioeconomics would not transpire under the No Action Alternative. Facility construction, demolition, and renovation would not occur, and there would be no increases in support personnel or aircraft operations. Socioeconomic conditions at Fairchild AFB and MacDill AFB would remain unchanged when compared to existing conditions identified in **Sections 3.10.2.1** and **3.10.2.2**, respectively.

3.11 Environmental Justice and Sensitive Receptors

3.11.1 Definition of the Resource

Analysis of environmental justice evaluates impacts on environmental justice populations (i.e., minority and low-income populations) and is directed by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*. The USAF *Guide for Environmental Justice Analysis under the Environmental Impact Analysis Process (EIAP)* (USAF 2014c) also provides guidance on how to fulfill the requirement for environmental justice analysis. EO 12898 was created to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, tribal, and local programs and policies. EO 12898 requires each federal agency to identify and address whether their proposed action results in disproportionately high and adverse environmental and health impacts on low income or minority populations.

Although not specifically identified as environmental justice populations, children and the elderly are considered sensitive receptors due to their inherent vulnerabilities. Analysis of potential impacts on children is directed by EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. EO 13045 states that each federal agency "(a) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately impact children; and (b) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks." Activities occurring near areas that could have higher concentrations of children during any given time, such as schools and childcare facilities, might further intensify potential impacts on children. To the extent to which children might be impacted, disproportionate impact on children is inherent due to their inherent vulnerabilities. There are no standard procedures or regulatory requirements for including the elderly in the impact analysis process; however, the USEPA stresses the importance of addressing environmental issues that may adversely impact them (USEPA 2014b).

Consideration of concerns related to environmental justice and sensitive receptor populations includes the race, ethnicity, poverty status, and age of populations near a proposed action. Such information aids in evaluating whether or not a proposed action would render vulnerable any of the groups targeted for protection.

For purposes of this EA, minority, low-income, child, and elderly populations are defined as follows:

- *Minority Population:* Minority populations are defined as members of the following population groups: Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and multi race that includes one of the aforementioned races; and Hispanic or Latino (CEQ 1997, USAF 2014c). The U.S. Census Bureau considers race and Hispanic or Latino origin (ethnicity) as two separate concepts, and these data are recorded separately.
- *Low-income Population:* Low-income populations are defined as individuals whose income is below the federal poverty threshold based on income data collected in the 2012-2016 American Community Survey. In 2016, the federal poverty threshold for an individual was $12,228 (U.S. Census Bureau 2016a).
- *Child Population:* Children are defined as all people 17 years of age and under.
- *Elderly Population:* Elderly persons are defined as all people 65 years of age and over.

For the purpose of this analysis, the environmental justice and sensitive receptors ROI includes the areas near MacDill AFB within which potential impacts from the MacDill AFB Alternative could occur. The proposed activity most likely to disproportionately affect environmental justice populations and adversely affect sensitive receptor populations would be KC-135 operations. Therefore, the ROI includes the census tracts within the proposed 65 dBA DNL noise contour for MacDill AFB that might contain people that could be affected by the MacDill AFB Alternative. Demographic data for the ROI provides key insights into environmental justice and sensitive receptor populations. The community of comparison for the ROI is the smallest set of U.S.

Census data encompassing the ROI and is used to establish appropriate thresholds for comparison analysis (USAF 2014c).

3.11.2 Affected Environment

3.11.2.1 MACDILL AFB

The environmental justice and sensitive receptors ROI for the MacDill AFB Alternative consists of census tracts 69, 70.02, and 72 (see **Figure 3-7**). No portions of MacDill AFB were included in the ROI because the installation land under the proposed 65 dBA DNL noise contour consists of land uses that are functionally related to the airfield (e.g., airfield, aircraft operations and maintenance, open space [undeveloped buffer space], industrial), and generally off limits to all non-military and non-DoD civilian personnel. Additionally, there are no other on-installation areas under the proposed 65 dBA DNL noise contour where environmental justice and sensitive receptor populations might congregate. The community of comparison is Hillsborough County, and data for the Tampa-St. Petersburg-Clearwater, Florida MSA and Florida are provided for additional areas of comparison.

Table 3-32 presents characteristics of the minority, low-income, child, and elderly populations in the ROI, including census tracts; Hillsborough County; Tampa-St. Petersburg-Clearwater, Florida MSA; and Florida.

Table 3-32. Minority, Low-Income, Child, and Elderly Populations in the Vicinity of MacDill AFB

Geographic Area	Total Population (for which Minority, Child, and Elderly Populations are Calculated) [a]	Percent Minority [a]	Percent Children [a]	Percent Elderly [a]	Total Population (for which Low-Income is Calculated) [b]	Percent Low-Income [b]
ROI	13,796	43.8	22.9	8.3	13,750	15.9
Census Tract 69	6,021	32.2	18.9	10.0	6,012	5.5
Census Tract 70.02	3,615	70.7	33.9	5.4	3,605	39.8
Census Tract 72	4,160	37.3	19.1	8.2	4,133	10.2
Hillsborough County	1,323,059	48.8	23.2	13.1	1,302,724	16.4
Tampa-St. Petersburg-Clearwater, FL MSA	2,927,714	35.0	20.5	18.7	2,881,758	15.1
Florida	19,934,451	44.4	20.4	19.1	19,514,334	16.1

Sources: [a] U.S. Census Bureau 2016b, [b] U.S. Census Bureau 2016e
Note: The data presented in this table are estimates from the 2012-2016 American Community Survey.

Table 3-32 provides the percent of children and elderly persons within the ROI and other areas for general characterization purposes. No schools, childcare centers, hospitals, or retirement communities are located under the proposed 65 dBA DNL noise contour. There are three parks (e.g., Gadsden Park, Skyview Park, and MacDill 48 Park [also known as ELAPP Forty Eight Park]) under the proposed 65 dBA DNL noise contour.

Figure 3-7. Environmental Justice and Sensitive Receptors ROI for the MacDill AFB Alternative

3.11.3 Environmental Consequences

For the purposes of analysis of potential impacts on environmental justice populations in this EA, the race, ethnicity, and poverty status of the ROI are examined to determine if a minority or low-income population could be disproportionately affected by the potential noise level increase resulting from the MacDill AFB Alternative. Populations affected by potential noise level increase are those within areas that would be exposed to the 65 to 69 dBA DNL and 70 to 74 dBA DNL noise contours during the MacDill AFB Alternative but not under existing conditions (see **Figure 3-6**). The potential for disproportionate impacts on minority and low-income populations are determined by comparing the percentage of each population in the ROI with the percentage of each population in the community of comparison. If the percentage of minority or low-income population within the ROI is greater than or equal to the percentages within the community of comparison, then disproportionate impacts on that population could be present if the MacDill AFB Alternative has a potential to impact that population. However, if the percentage of minority or low-income population within the ROI is less than the percentages within the community of comparison, there would be no disproportionate impacts (USAF 2014c).

For all child and elderly populations, disproportionate impacts are inherent. The extent to which child and elderly populations would be impacted is disproportionate due to their vulnerabilities from age-related physiological differences in types and levels of exposure and, therefore, the evaluation of environmental impacts on these populations is different from the evaluation of environmental impacts on adults and other populations.

3.11.3.1 MACDILL AFB ALTERNATIVE

In 2016, the percentages of minority and low-income populations within the ROI were lower than those of Hillsborough County (the community of comparison). The percentage of minority persons within the ROI (43.8 percent) was lower than Hillsborough County (48.8 percent) and Florida (44.4 percent), but higher than the Tampa-St. Petersburg-Clearwater, Florida MSA (35.0 percent) (U.S. Census Bureau 2016b). Low-income persons made up 15.9 percent of the population of the ROI, which was lower than Hillsborough County (16.4 percent) and Florida (16.1 percent) but slightly higher than the Tampa-St. Petersburg-Clearwater, Florida MSA (15.1 percent) (U.S. Census Bureau 2016e). Within the ROI, census tract 70.02 had larger percentages of minority and low-income populations (70.7 percent and 39.8 percent, respectively) than Hillsborough County (U.S. Census Bureau 2016b, U.S. Census Bureau 2016e).

Facility construction, demolition, and renovation would occur within discrete areas of MacDill AFB in land uses that are functionally related to the airfield where access is generally restricted to military and DoD civilian personnel. Therefore, there would be no impacts on environmental justice or sensitive receptor populations within the ROI as a result of construction, demolition, and renovation. Additionally, there would be little to no impacts on on-installation populations during construction, demolition, and renovation. Standard construction safety BMPs (e.g., fencing and other security measures) would reduce potential risks to on-installation populations to minimal levels. Therefore, construction, demolition, and renovation of the MacDill Alternative would not result in disproportionate impacts on any populations, including minority and low-income populations, or increased exposure of children and elderly persons to environmental health risks or safety risks.

The MacDill AFB Alternative would result in an average of 29.3 additional KC-135 operations per day. Noise resulting from the increase of KC-135 operations would have potential to cause adverse impacts on populations within the ROI because approximately 167 acres outside of MacDill AFB would be exposed to increased noise levels, although approximately 94 acres of this area would be over water (see **Figure 3-6**). As compared to existing conditions, approximately 52 additional acres of land in the ROI would be exposed to noise within the 65 to 69 dBA DNL noise contour, and approximately 21 additional acres of land would be exposed to the 70 to 74 dBA DNL noise contour (see **Table 3-33**). Of the 73 acres of land area within the ROI that would be exposed to increased noise levels, most (approximately 65 acres) are in census tract 69. This area of census tract 69 consists of residential, recreational/open space, urban and community mixed use, and light industrial land uses. The approximately 6 acres of census tract 70.02 that would be exposed to increased noise levels consists of open space and light industrial uses (i.e., no residences). Approximately 2 acres within census tract 72 would be exposed to increased noise levels; this area consists of residential and open space uses. However, the 0.8-acre portion that would be exposed to the proposed 70 to 74 dBA DNL noise contour within census tract 72 is undeveloped and does not contain residences.

Table 3-33. Additional Land Area within the ROI Exposed to Increased Noise Levels under MacDill AFB Alternative

Proposed Noise Contour (dBA DNL)	Census Tract 69	Census Tract 70.02	Census Tract 72	Total
65 to 69	45.1 acres	5.7 acres	1.3 acres	**52.1 acres**
70 to 74	19.8 acres	0.2 acres	0.8 acres	**20.8 acres**
75 to 79	N/A	N/A	N/A	**N/A**
80 to 84	N/A	N/A	N/A	**N/A**
≥85	N/A	N/A	N/A	**N/A**
Total	**64.9 acres**	**5.9 acres**	**2.1 acres**	**72.9 acres**

Sources: Interpreted from data from USAF 2017b; USAF 2016a
Key: N/A = Not applicable

Census tract 69 (i.e., census tract in the ROI with most land area exposed to increased noise levels) has lower percentages of minority and low-income populations than Hillsborough County (the community of comparison). Additionally, the percentage of minority and low-income populations within census tract 69 are lower than the ROI as a whole. Therefore, there would be no significant or disproportionately high and adverse health or environmental impacts on minority or low-income populations near MacDill AFB during construction activities or during aircraft operation.

As stated in **Section 3.7.3.2**, changes in noise contours at MacDill AFB would constitute a minor impact from noise from individual aircraft overflights and a moderate impact from the noise increase in areas of incompatible land use. The proposed noise contours would overlap with additional areas of three parks and residential areas. However, there are no schools, childcare centers, hospitals, retirement communities, or other areas where sensitive receptors might congregate within the proposed 65 dBA DNL and 70 dBA DNL noise contours near MacDill AFB. Because there would be adverse noise impacts that could affect children and

elderly persons, the impact on these populations would be considered disproportionate. However, the impact would not be significant because the effect from individual overflight is considered an annoyance that would not be a significant environmental health or safety risk. Additionally, the areas exposed to increased noise would be small and do not contain any child- or elderly-specific uses or land uses.

3.11.3.2 NO ACTION ALTERNATIVE

Impacts on environmental justice and sensitive receptor populations would not transpire under the No Action Alternative. Facility construction, demolition, and renovation would not occur, and there would be no increases in support personnel or aircraft operations. Environmental justice and sensitive receptor conditions at and surrounding MacDill AFB would remain unchanged when compared to existing conditions identified in **Section 3.11.2.1**.

3.12 Water Resources

3.12.1 Definition of the Resource

Water resources are natural and man-made sources of water that are available for use by and for the benefit of humans and the environment. Water resources relevant to Fairchild AFB and MacDill AFB include groundwater, surface water, floodplains, and wetlands. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes.

Groundwater. Groundwater is water that collects or flows beneath the Earth's surface, filling the porous spaces in soil, sediment, and rocks. A deposit of subsurface water that is large enough to tap via a well is referred to as an aquifer. Groundwater originates from precipitation, percolates through the ground surface, and is often used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater can typically be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate.

Surface Water. Surface water includes natural, modified, and constructed water confinement and conveyance features above groundwater that may or may not have a defined channel and discernable water flows. These features are generally classified as streams, springs, wetlands, natural and artificial impoundments (e.g., ponds, lakes), and constructed drainage canals and ditches.

Stormwater is surface water generated by precipitation events that may percolate into permeable surficial sediments or flow across the top of impervious or saturated surficial areas, a condition known as runoff. Stormwater is an important component of surface water systems because of its potential to introduce sediments and other contaminants that could degrade lakes, rivers, and streams. Stormwater flows, which can be exacerbated by high proportions of impervious surfaces associated with buildings, roads, and parking lots, are important to the management of surface water. Stormwater systems reduce sediments and other contaminants that would otherwise flow directly into surface waters.

The CWA (33 USC §1251 et seq., as amended) establishes federal limits, through the NPDES, on the amounts of specific pollutants that are discharged to surface waters to restore and

maintain the chemical, physical, and biological integrity of the water. An NPDES permit would be required for any change in the quality or quantity of wastewater discharge or stormwater runoff from construction sites where 1 or more acres would be disturbed. The permit mandates use of BMPs to ensure that soil disturbed during construction does not pollute nearby water bodies.

The NPDES stormwater program requires construction site operators engaged in activities that disturb 1 acre or more to obtain coverage under a Generic Permit for Stormwater Discharge from Large and Small Construction Activities for their stormwater discharges. Construction or demolition that necessitates a permit requires preparation of a Notice of Intent to discharge stormwater and a SWPPP that is implemented during construction.

The issuance of stormwater NPDES permits is conducted by either a USEPA regional office or a state regulatory office depending on which organization has primacy. In the State of Washington, USEPA has primacy over federal facilities. In Florida, FAC Chapters 62-621 and 62-346 address NPDES permitting and environmental resource permits, respectively.

Section 438 of the EISA (42 USC § 17094) establishes stormwater design requirements for federal construction projects that disturb a footprint greater than 5,000 square feet. Additional guidance is provided in the USEPA *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the EISA*. UFC 3-210-10 *Low Impact Development* also provides technical criteria, technical requirements, and references for the planning and design of applicable DoD projects to comply with stormwater requirements under EISA Section 438. Per these requirements, any increase in surface water runoff as a result of the proposed construction would be attenuated through the use of temporary and/or permanent drainage management features. The integration of low impact development design concepts incorporates site design and stormwater management to maintain the site's pre-development runoff rates and volumes to minimize further potential adverse impacts associated with increases in impervious surface area.

Water Quality Standards. Water quality standards are regulated by USEPA, under the Safe Drinking Water Act (42 USC §§ 201, 300 et seq.) and the CWA. Section 303(d) of the CWA requires states to identify and develop a list of impaired water bodies where technology based and other required controls have not provided attainment of water quality standards. Section 305(b) of the CWA requires states to assess and report the quality of their water bodies.

Water quality standards for surface waters at Fairchild AFB are specified in Chapter 173-201A of the WAC. In addition, sediment management standards for the state are established in Chapter 173-204 of the WAC.

Water quality standards at MacDill AFB are regulated by the FDEP under the following FAC Chapters:

- 62-302 (Surface Water Quality Standards)
- 62-4 (Antidegradation policy in Rule 62-4.242)
- 62-303 (Impaired Waters Rule)

- 62-55 and 62-550 (Drinking Water Quality Standards)
- 62-604 (Wastewater).

Floodplains. Floodplains are areas of low-level ground present along rivers, stream channels, large wetlands, or coastal waters. Such lands might be subject to periodic or infrequent inundation due to rain or melting snow. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, and nutrient cycling.

The risk of flooding typically depends on local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which defines 100-year and 500-year floodplains. The 100-year floodplain is an area that has a 1 percent chance of inundation by a flood event in a given year, while 500-year floodplains have a 0.2 percent chance of inundation in a given year. Certain facilities inherently pose too great a risk to be in either the 100- or 500-year floodplain, such as hospitals, schools, or storage buildings for irreplaceable records. To reduce the risks to human health and safety, federal, state, and local regulations often limit floodplain development to passive uses such as recreational and preservation activities.

EO 11988, *Floodplain Management*, requires federal agencies to determine whether a proposed action would occur within a floodplain. This determination typically involves consultation of FEMA Flood Insurance Rate Maps, which contain enough general information to determine the relationship of the project area to nearby floodplains. EO 11988 directs federal agencies to avoid floodplains unless the agency determines that no practicable alternative exists. Where the only practicable alternative is to site in a floodplain, the agency should develop measures to reduce impacts and mitigate unavoidable impacts.

Wetlands. Wetlands are an important natural system and habitat because of the diverse biologic and hydrologic functions they perform. These functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, wildlife habitat provision, and erosion protection.

Sections 404 and 401 (through water quality certification) of the CWA regulate the discharge of dredged or fill materials into the waters of the United States. The term “waters of the United States” has a broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic habitats (including wetlands). The U.S. Army Corps of Engineers defines wetlands as “those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (33 CFR 328.3(c)(4)).

EO 11990, *Protection of Wetlands* (24 May 1977), directs agencies to consider alternatives to avoid adverse impacts and incompatible development in wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland and the proposed construction incorporates all possible measures to limit harm to the wetland. Agencies should use economic and environmental data, agency mission statements, and any other pertinent information when deciding whether or not to build in

wetlands. EO 11990 directs each agency to provide for early public review of plans for construction in wetlands.

USAF policy is to avoid construction of new facilities within areas containing wetlands or within floodplains, where practicable. A FONPA must be prepared and approved by the applicable USAF major command for all projects involving construction in a wetland or action within floodplain areas.

3.12.2 Affected Environment

3.12.2.1 FAIRCHILD AFB

Groundwater. There are several regional aquifers supplying water to the Fairchild AFB area including: the Spokane Valley-Rathdrum Prairie Aquifer, the Latah (Hangman) Creek Aquifer, and the West Plains Aquifer. Perched groundwater can occur 5 to 20 feet bgs. Shallow aquifers below Fairchild AFB are correlated with bedrock fractures filled with gravel or deep deposits of stratified sands and gravels, whereas deeper confined aquifers are correlated with basalt layers with major aquifers at 100 to 200 feet and 400 feet bgs. Subsurface groundwater trends easterly and southeasterly from the installation (Fairchild AFB 2012b).

Fairchild AFB obtains potable water from the Fort George Wright Annex groundwater well complex located off-installation. Potable water is drawn from the Spokane Valley-Rathdrum Prairie Aquifer and the Latah (Hangman) Creek Aquifer. Fairchild AFB operates a potable water storage and distribution system that provides water for various uses at all the facilities on the installation (see **Section 3.6** for a discussion on water infrastructure).

Surface Water. Fairchild AFB is located within the Deep Creek, Upper Hog Canyon Creek, and the Nine Mile Reservoir-Spokane River hydrologic unit code watersheds (USEPA 2018d). There are no defined, natural stream courses on Fairchild AFB; however, there are wetlands with seasonal or persistent ponding and stormwater catchments or conveyances (Fairchild AFB 2012b). Surface hydrology on Fairchild AFB can generally be described as isolated from free-flowing surface waters within the watersheds; the nearest substantial water bodies to Fairchild AFB are the Spokane River, approximately 13 miles to the east, and several lakes (i.e., Medical, West Medical, Silver, Clear, Otter, and Granite) immediately south of the installation (USAF 2014b). According to USEPA, there are water bodies listed as impaired under Section 303(d) of the CWA approximately 4 miles south of Fairchild AFB (USEPA 2018d).

Stormwater runoff flows across the flat landscape and ponds in depressional areas before infiltrating, evaporating, or being collected in man-made drains in the developed areas of the installation. The stormwater system is divided into eight drainage basins, with Drainage Basin 1 being the largest basin that drains approximately one-third of Fairchild AFB and contains the most industrial activities. All of the proposed facility construction, demolition, and renovation would occur within Drainage Basin 1. Fairchild AFB has been issued a NPDES MSGP to manage stormwater runoff and to protect the quality of surface water on and near the installation (Fairchild AFB 2012b). An NPDES permit is also required for construction activities disturbing greater than 1 acre to ensure that sedimentation due to erosion does not impact local surface water quality.

Fairchild AFB was issued an NPDES Storm Water MSGP 2000 by USEPA on 13 December 2000 (WAR05A52F), on 17 September 2009 (WAR05B94F) for coverage under MSGP 2008, and again in 2015 for coverage under MSGP 2015 (WAR05F302) (Fairchild AFB 2015c).

Floodplains. According to FEMA Flood Insurance Rate Map Numbers 53063C0675D and 53063C0500D, effective July 6, 2010, all areas of the Proposed Action are within Flood Zone X, which includes "Areas determined to be outside the 0.2% annual chance floodplain" (i.e., the 500-year floodplain) (FEMA 2010).

Wetlands. There are approximately 215 acres of disturbed and semi-natural wetlands on Fairchild AFB. Wetlands and associated fringe communities occur around potholes and vernal pools in the southern portion of the installation. The southeastern edge of the installation supports a large wetland complex consisting of Russian olive scrub-shrub habitat and an assortment of grasses and grass-like plants. All wetlands on Fairchild AFB have been determined to be "isolated" and are therefore not regulated under Section 404 of the CWA. However, under state laws and regulations, Washington maintains regulatory authority over all wetlands in that state. Most wetlands on the installation are significantly disturbed, primarily from agricultural and other land use practices prior to the establishment of Fairchild AFB (Fairchild AFB 2012b).

No wetlands are within the areas of the Proposed Action. The closest wetland is more than 0.25 miles away on the south side of runway.

3.12.2.2 MACDILL AFB

Groundwater. MacDill AFB has two aquifer systems: a shallow, surficial aquifer and the underlying regional Floridan aquifer. The surficial aquifer system (composed of sand, clayey sand, and shell) is approximately 20 feet thick and is used to supply small irrigation systems off-installation and is not used by MacDill AFB. This shallow aquifer ranges from the surface to approximately 5 feet bgs at inland locations. The surficial aquifer is highly susceptible to groundwater contamination, primarily due to shallow water table depth and permeable sediments. Underground storage tanks, landfills, and golf courses (i.e., through fertilizer applications) are the primary sources of its contamination. Recharge of the surficial aquifer primarily occurs through precipitation percolation (MacDill AFB 2017c).

The surficial aquifer is generally underlain by heterogeneous calcareous clays and limestone with varying permeability. The Floridan aquifer underlies the clay and limestone barrier. The Floridan aquifer is not significantly recharged from the surface at MacDill AFB or the surficial aquifer. The installation is primarily a discharge zone for the Floridan aquifer because of the upward flow of groundwater. The groundwater quality of the Floridan aquifer has not been fully defined due to a lack of monitoring wells. This aquifer is rated as moderately susceptible to contamination. There is slight contamination of this aquifer but it is not contaminated to the extent that remediation is required (MacDill AFB 2017c).

No potable water wells are on the installation, and MacDill AFB obtains potable water from the City of Tampa (MacDill AFB 2017c). The City of Tampa obtains potable water from several different sources including the Floridan aquifer. MacDill AFB operates a potable water storage

and distribution system that provides water for various uses at all the facilities on the installation (see **Section 3.6** for a discussion on water infrastructure).

Surface Water. MacDill AFB is within an independent drainage area with no surface waters entering or leaving the installation prior to discharge to Tampa and Hillsborough bays. The installation is surrounded by Hillsborough Bay (to the east), Tampa Bay (to the southwest), and Old Tampa Bay (to the northwest). Raccoon Hammock and Broad Creek are the main natural drainage features on MacDill AFB and are in the southern portion of the installation. Surface water flows on the installation are primarily stormwater runoff. Ditches and pipes have been constructed to drain the developed portions of the installation. The drainage system is composed of approximately 24 miles of culverts and 56 miles of open ditches and canals. The drainage systems ultimately discharge into either Tampa Bay or Hillsborough Bay. Multiple artificial impoundments exist on MacDill AFB. The two largest impoundments, Lake McClelland and Lewis Lake, total approximately 20 acres and are situated on the eastern side of the installation. Another 35 acres of small, unnamed impoundments occur throughout the installation. The coastal plain at MacDill AFB is crisscrossed with drainage canals that are primarily mangrove swamps. Most of these canals are interconnected and influenced by tides (MacDill AFB 2017c).

The State of Florida in 62-302.40 FAC classifies all surface waters according to their designated use. Tampa Bay is a Class III water body, with portions of the bay south and southwest of MacDill AFB classified as Class II waters. Class III is designated for fish consumption, recreation, propagation and maintenance of a healthy, well-balanced population of fish and wildlife. Class II is designated for the same uses as Class III and includes shellfish propagation or harvesting. According to USEPA, the Lower Hillsborough Bay, in the Tampa Bay watershed, is listed as impaired due to the presence of mercury, elevated chlorophyll a, and low dissolved oxygen (USEPA 2010).

MacDill AFB has two NPDES permits: a MSGP for stormwater discharge associated with industrial activity (Permit No. FLR05E128) and a Phase II MS4 general stormwater permit (Permit No. FLR04E059). The MSGP primarily covers flightline areas, such as the runway and the airfield aprons at MacDill AFB, including activities such as aircraft refueling, vehicle maintenance, and materials handling. As a component of the MSGP, MacDill AFB maintains and follows a SWPPP that documents existing stormwater management practices and guides personnel who are responsible for ensuring that potential stormwater pollution is minimized. MacDill AFB also maintains a number of documents that provide guidance for handling hazardous materials appropriately and detailed procedures to follow in the event of a spill (see **Section 3.5**).

The proposed squadron operations facility parking lot coincides with a small drainage ditch. The installation's geographic information system data identifies this ditch as almost never containing water and if so, only holds water during storm events. No other surface water features coincide with the areas of the MacDill AFB Alternative; however, several surface water features are within this portion of the installation (see **Figure 3-8**).

Figure 3-8. Water Resources Associated with the MacDill AFB Alternative

Floodplains. Most of MacDill AFB is within the 100-year floodplain (see **Figure 3-8**); therefore, the installation must comply with the National Flood Insurance Program's floodplain management regulations. According to FEMA Flood Insurance Rate Map Number 12057C0476H, effective August 28, 2008, all areas of the MacDill AFB Alternative are within Flood Zone AE (FEMA 2008). In this zone, properties have a greater than 1 percent chance of experiencing flooding in any given year (i.e., the 100-year floodplain). The installation is also entirely within Tampa's Coastal High Hazard Area, which is an area threatened by tropical storms and hurricanes. Any hurricane, particularly those of higher intensity, could cause major damage to facilities in the region.

Wetlands. More than 20 percent of the MacDill AFB installation area is wetlands, including more than 500 contiguous acres of prime mangrove community along the southern installation coastline. A wetland delineation study in 1998 identified, delineated, and classified approximately 1,195 acres of wetlands on the installation. This included 880 acres of estuarine scrub/shrub emergent wetlands, 200 acres of palustrine wetlands, and 115 acres of needle-leaved forested wetlands (MacDill AFB 2017c). **Figure 3-8** shows the wetland areas near the areas of the MacDill AFB Alternative.

The proposed addition to the fitness center (Building 303) is the only part of the MacDill AFB Alternative in close proximity to wetlands. This construction project would entail an addition onto an already existing facility located approximately 100 feet north of the wetlands. All other portions of the MacDill AFB Alternative are more than 500 feet away from wetlands. In addition, the drainage ditch that coincides with the proposed squadron operations facility parking lot might be a Waters of the United States thereby potentially regulated under Sections 401/404 of the CWA.

3.12.3 Environmental Consequences

A proposed action could have significant impacts with respect to water resources if any of the following were to occur:

- Substantially reduce water availability or supply to existing users.
- Overdraft groundwater basins.
- Exceed safe annual yield of water supply sources.
- Substantially affect water quality.
- Endanger public health or safety by creating or worsening health or flood hazard conditions.
- Threaten or damage unique hydrologic characteristics.
- Violate established laws or regulations adopted to protect water resources.

Determination of the significance of wetland impacts is based on (1) the function and value of the wetland, (2) the proportion of the wetland that would be affected relative to the occurrence of similar wetlands in the region, (3) the sensitivity of the wetland to proposed activities, and (4) the duration of ecological ramifications. Impacts on wetland resources are considered significant if high-value wetlands would be adversely affected.

3.12.3.1 PROPOSED ACTION

Groundwater. No sensitive groundwater resources are known to occur in any areas planned for the proposed facility construction, demolition, or renovation projects. There are also no existing or proposed groundwater wells near these areas. Excavation associated with the proposed construction would not intersect the local groundwater table.

Groundwater recharge to the aquifer system would be impacted if new impervious surfaces increase runoff to nearby water bodies, thereby decreasing infiltration to the soil and bedrock. The Proposed Action would result in a net increase of 34,172 ft^2 of impervious surfaces. Following the guidance provided by Section 438 of the EISA, Fairchild AFB would ensure that post-project hydrology mirrors pre-project hydrology on and around the areas of the Proposed Action to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. The quality and quantity of groundwater on and adjacent to Fairchild AFB is not anticipated to be adversely affected; therefore, impacts to groundwater would not be significant.

Accidental spills or leaks of substances such as fuels, oils, and other lubricants could contaminate soils and groundwater aquifers. All equipment would be maintained according to manufacturer's specifications and all fuels and potentially hazardous materials would be contained and stored appropriately. The potential for contamination to occur would be minimized through implementation of the Spill Prevention Control and Countermeasures Plan, and the use of secondary containment for the temporary storage of any hazardous materials and other BMPs would prevent or minimize spills or leaks.

The Proposed Action would cause a long-term increase in the consumption of groundwater for potable water purposes. This increase would result from the 13 percent increase in the installation's population. Fairchild AFB obtains potable water from off-installation groundwater wells, and the increase in groundwater consumption from the Proposed Action would not appreciably reduce regional groundwater availability. Impacts on potable water infrastructure are discussed in **Section 3.6**.

Surface Water. There is a potential for erosion and associated sedimentation to flow into surface water features during facility construction and demolition. All ground-disturbing activities would be conducted in accordance with the applicable stormwater discharge permit to control erosion and prevent sediment, debris, or other pollutants from entering the stormwater system. Construction such as clearing, grading, trenching, and excavating could displace soils and sediment. If not managed properly, disturbed soils and sediments can easily be washed into nearby water bodies during stormwater events and reduce water quality. However, erosion and sediment controls and stormwater management practices implemented consistent with the project-specific SWPPP would minimize the potential for adverse impacts associated with erosion and sedimentation. Protection measures could include the use of silt fences and covering of soil stockpiles. Fairchild AFB would be required to obtain coverage under the NPDES General Permit for all construction activities over 1 acre to minimize impacts from sedimentation on water quality.

New construction and facility additions could result in a potential increase in surface runoff due to an increase in impervious surfaces (i.e., 34,172 ft^2). The predevelopment hydrology would be

maintained or restored, to the maximum extent practical, with regard to rate, volume and duration of flow. All of the proposed facility construction, demolition, and renovation would occur within Drainage Basin 1, which drains into two small ponds. These retention ponds help attenuate the stormwater flow from Drainage Basin 1 prior to discharge off-installation. Stormwater controls and BMPs implemented consistent with a SWPPP would avoid the potential for adverse impacts on surface waters. Based on the installation's distance from free-flowing surface waters, it is unlikely that stormwater discharges from the installation would reach any impaired water bodies.

Floodplains. The areas of the Proposed Action would not occur within the 100- or 500-year floodplains. As such, there would be no impacts on floodplains.

Wetlands. No known wetlands exist in the areas of the Proposed Action. Therefore, the Proposed Action is not anticipated to directly or indirectly impact wetlands.

3.12.3.2 MACDILL AFB ALTERNATIVE

Groundwater. No sensitive groundwater resources are known to occur in any areas planned for the proposed facility construction, demolition, or renovation projects. There are also no existing or proposed groundwater wells near these areas. Excavation associated with the proposed construction is not anticipated to intersect the local groundwater table.

Groundwater recharge to the aquifer system would be impacted if new impervious surfaces increase runoff to nearby water bodies, thereby decreasing infiltration to the soil and bedrock. The MacDill AFB Alternative would result in a net increase of 104,500 ft^2 of impervious surfaces. Following the guidance provided by Section 438 of the EISA, MacDill AFB would ensure that post-project hydrology mirrors pre-project hydrology on and around the areas of the MacDill AFB Alternative to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. The quality and quantity of groundwater on and adjacent to MacDill AFB would not be adversely affected; therefore, impacts to groundwater would not be significant.

Accidental spills or leaks of substances such as fuels, oils, and other lubricants could contaminate soils and groundwater aquifers. All equipment would be maintained according to manufacturer's specifications and all fuels and potentially hazardous materials would be contained and stored appropriately. The potential for contamination to occur would be minimized through the implementation of the MacDill AFB Spill Prevention Control and Countermeasures Plan (MacDill AFB 2012b) and the use of secondary containment for the temporary storage of any hazardous materials and other BMPs would prevent or minimize spills or leaks.

The MacDill AFB Alternative would cause a long-term increase in the consumption of groundwater for potable water purposes. This increase would result from the 2.5 percent increase in the installation's population. MacDill AFB obtains potable water from the City of Tampa, which uses several different sources including groundwater. The increase in groundwater consumption from the MacDill AFB Alternative would not appreciably reduce regional groundwater availability. Potable water infrastructure is discussed in **Section 3.6**.

Surface Water. There is a potential for erosion and associated sedimentation to flow into surface water features during facility construction and demolition. All ground-disturbing activities would be conducted in accordance with the applicable stormwater discharge permit to control erosion and prevent sediment, debris, or other pollutants from entering the stormwater system. Construction activities such as clearing, grading, trenching, and excavating could displace soils and sediment. If not managed properly, disturbed soils and sediments can easily be washed into nearby water bodies during stormwater events and reduce water quality. However, erosion and sediment controls and stormwater management practices implemented consistent with the project-specific SWPPP would minimize the potential for adverse impacts associated with erosion and sedimentation. Protection measures could include the use of silt fences and covering of soil stockpiles. MacDill AFB would be required to obtain coverage under the NPDES General Permit for all construction activities over 1 acre to minimize impacts from sedimentation on water quality.

New construction and facility additions could result in a potential increase in surface runoff due to an increase in impervious surfaces (i.e., 104,500 ft^2). The predevelopment hydrology would be maintained or restored, to the maximum extent practical, with regard to rate, volume and duration of flow. Stormwater controls and BMPs implemented consistent with a SWPPP would avoid the potential for adverse impacts on surface waters.

Impacts on surface water would be further reduced by adhering to state stormwater rules governed by Part IV of Chapter 373 Florida Statues. These rules are administered by the Southwest Florida Water Management District and require the treatment of stormwater to avoid adverse impacts on water quality and to attenuate stormwater to control adverse flooding conditions. At a minimum, the Southwest Florida Water Management District requires that MacDill AFB treat 0.5 inch of stormwater runoff from new construction or redevelopment projects on the installation. Because MacDill AFB discharges to impaired water bodies, it must demonstrate that post-project pollutant loads show a net improvement of discharges.

Floodplains. All of the proposed facility construction, demolition, and renovation would occur within the 100-year floodplain. Direct impacts from construction within the 100-year floodplain are unavoidable because less than three percent of MacDill AFB's land mass is outside the 100-year floodplain and is suitable for development, and the installation's cantonment area, where the MacDill Alternative would occur, is entirely within the floodplain (see **Figure 3-8**). The proposed facility construction, demolition, and renovation would be designed to avoid and minimize floodplain impacts and flood damage to facilities to the extent possible. The resulting floodplain displacement would be expected to have no impacts on flooding potential in the area.

***Wetlands*.** No direct impacts on wetlands would occur. Construction of the proposed addition onto the fitness center would have no direct impacts on wetlands and proper implementation of construction BMPs would minimize potential indirect impacts on nearby wetlands. Examples of such construction BMPs include using stabilized construction entrances, silt fencing, berms and swales, check dams, vegetated channels, basins and traps, stabilization, erosion control blankets, inlet protection, outlet protection, and level spreaders to reduce soil erosion and stormwater runoff. The use of these BMPs would limit the intensity, duration, and extent of

indirect impacts on wetlands. The high quality mangrove wetlands located on the southern installation coastline would not be impacted by the MacDill AFB Alternative.

The proposed squadron operations facility parking lot would be constructed on the site of a drainage ditch, and it has not yet been determined whether this ditch is a Waters of the United States. A jurisdictional determination would be made as to whether this ditch is considered waters of the United States and thereby regulated under Sections 401/404 of the CWA. MacDill AFB would correspond with the U.S. Army Corps of Engineers prior to commencing any groundbreaking activities to obtain the necessary jurisdictional determination.

3.12.3.3 NO ACTION ALTERNATIVE

No impacts on water resources would occur under the No Action Alternative. No facility construction, demolition, and renovation would occur, and there would be no increases in support personnel or aircraft operations. Water resources at Fairchild AFB and MacDill AFB would remain the same as existing conditions identified in **Sections 3.12.2.1** and **3.12.2.2**, respectively.

4. Cumulative Impacts

Federal regulations implementing NEPA (40 CFR §§ 1500–1508) require that the cumulative impacts of a proposed action be assessed. CEQ regulations implementing the procedural provisions of NEPA define cumulative impacts as follows (40 CFR 1508.7):

> "The impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions."

Cumulative impacts can be additive (i.e., the net adverse cumulative impacts are strengthened by the sum of individual impacts), countervailing (i.e., the net adverse cumulative impacts are less because of the interaction between beneficial and adverse individual impacts), or synergistic (i.e., the net adverse cumulative impacts are greater than the sum of the individual impacts). Cumulative impacts could result from individually minor, but collectively significant, actions that take place over time. Accordingly, a cumulative impacts analysis identifies and defines the scope of other actions and their interrelationship with a proposed action if there is an overlap in space and time.

Cumulative impacts may occur when there is a relationship between a proposed action and other actions expected to occur in a similar location (i.e., overlapping geographic location) or during a similar time period (i.e., coincidental or sequential timing of events). This relationship may or may not be obvious. The impacts may then be incremental and may result in cumulative impacts. Actions overlapping with or in close proximity to a proposed action can reasonably be expected to have more potential for cumulative impacts on "shared resources" than actions that may be geographically separated. Similarly, actions that coincide in the same timeframe tend to offer a higher potential for cumulative impacts.

This section discusses the potential for cumulative impacts caused by the Proposed Action and MacDill AFB Alternative when combined with other past, present, and reasonably foreseeable actions.

4.1 Fairchild AFB Cumulative Impacts

4.1.1 Past, Present, and Reasonably Foreseeable Actions

This section evaluates the cumulative impacts of the Proposed Action by determining the incremental contribution of the Proposed Action together with past, present, and reasonably foreseeable actions. **Table 4-1** summarizes the past, present, and reasonably foreseeable actions within the region where interaction with the Proposed Action might occur. The table briefly describes each action and presents the proponent, location, and the timeframe (e.g., past, present/ongoing, future) of the action.

Table 4-1. Past, Present, and Reasonably Foreseeable Actions at Fairchild AFB and Associated Region

Action	Location	Timeframe	Description
Military Actions			
Beddown KC-46As at up to four installations nationwide	Fairchild AFB, Grand Forks AFB, Joint Base McGuire-Dix Lakehurst, and Travis AFB	Future	As part of a separate basing process, align 24 or 36 KC-46A to up to four installations. Associated facility construction, demolition, and renovation would also occur. USAF's decision on this beddown will be made subsequent to independent NEPA analysis (USAF 2018).
Programmed Construction Projects	Fairchild AFB	Future	Implement various construction projects including a recreational vehicle storage lot; renovate/consolidate Buildings 2245, 2248, and 2249; addition to Security Forces Squadron Building 4206 at Main Gate; site enhancements at KC-135 display; new entry control facility; outdoor track (and repair grass infield); expanded parking lot at Building 610 (theater); automated gate; water survival training facility; addition to satellite fire station; pest management facility; and Joint Personnel Recovery Agency command and control/mission support facility (Fairchild AFB 2018d).
Programmed Infrastructure Projects	Fairchild AFB	Future	Repair electrical distribution switches installation-wide; repair sewer lines and install wastewater metering installation-wide; bury electrical lines at the munitions storage area; add heating, ventilation, and air conditioning and water infrastructure to Building 2012; repair North Substation; install irrigation systems at several locations; and move open water ditch in clear zone to underground (Fairchild AFB 2018d).
Programmed Transportation Projects	Fairchild AFB	Future	Implement various transportation infrastructure improvement projects including Bong Street repaving, various road maintenance and sealing, and road and parking lot repair in the civil engineering area (Fairchild AFB 2018d).
Programmed Demolition of Underground Storage Tanks	Fairchild AFB	Future	Demolish abandoned underground storage tanks in four locations (Fairchild AFB 2018d).
Programmed Airfield Projects	Fairchild AFB	Future	Implement various projects at the airfield including repair of Taxiways G, J, and P; repair Taxiway E shoulder; repair/replace/relocate taxiway guidance signage; maintain airfield striping; and install drainage for runway lights (Fairchild AFB 2018d).
Relevant State and Local Actions			
Airway Heights Recreation Complex	Airway Heights	Future	Construct indoor pools, athletic courts, fitness areas, and meeting rooms within a 70-acre recreational complex with multiple outdoor sport fields north of Spokane County Raceway Park (Bjerkin 2018).

Action	Location	Timeframe	Description
Relevant State and Local Actions (continued)			
Spokane Tribe Economic Project (STEP) Mixed Use Development	West Plains of Spokane County	Past, Present, Future	The STEP mixed use development is being constructed in phases and consists of retail and commercial development, casino, resort hotel, entertainment, and Tribal Cultural Center and wellness center (STEP 2018).
Washington State Department of Transportation 2017 to 2020 State Transportation Improvement Program/ Spokane Regional Transportation Council Horizon 2040 Spokane Metropolitan Transportation Plan	Washington State – specifically Spokane County near Fairchild AFB	Present, Future	Implement the following actions: · Construct a 0.26-mile multiuse pathway along the southern edge of U.S. 2 between Hayford Road and Deer Heights Road (3 miles east of Fairchild AFB). · Modify the West Plains Transit Center at I-90 and State Route 902 by including parking stalls, bus-only parking lanes, and a pedestrian bridge. · Reconstruct the I-90 interchanges for Medical Lake and Geiger Field (WA DOT 2018, SRTC 2018).

Past activities are those actions that occurred within the geographic scope of cumulative impacts and have shaped the current environmental conditions of Fairchild AFB and the surrounding area. Fairchild AFB was established in 1942 and named the Spokane Air Depot while it served as a repair depot for damaged aircraft during World War II. The installation has increased more than three times in size since its initial construction, and the facilities and infrastructure have undergone several major periods of construction and reconstruction to accommodate student training loads and new missions and commands (USAF 2014b). For most resource areas—such as biological resources, geological resources, infrastructure and transportation, hazardous materials and wastes, and water resources—the impacts of past actions are now part of the existing environment and are incorporated in the description of the affected environment in **Section 3**.

4.1.2 Cumulative Impacts at Fairchild AFB

The following analysis qualitatively examines the cumulative impacts that would result from the incremental impacts of the Proposed Action when combined with the past, present, and reasonably foreseeable future actions identified in **Table 4-1**.

Air Quality. The State of Washington takes into account the impacts of all past, present, and reasonably foreseeable emissions during the development of the State Implementation Plan. The state accounts for all significant stationary, area, and mobile emission sources in the development of this plan. Emissions generated by the Proposed Action would be completely within an attainment area, and activities of this size and nature would not contribute significantly to adverse cumulative impacts on air quality. If the Proposed Action were implemented concurrently with the beddown of 24 or 36 KC-46A at the installation, flight operations would increase by more than 50 percent, resulting in long-term, moderate, adverse increases in air pollutant emissions on and near the installation.

Cumulatively, the facility construction, demolition, and renovation associated with the Proposed Action and the cumulative development projects (e.g., Airway Heights recreation complex and STEP mixed-use development) would result in short-term, intermittent increases in air pollutant levels on or near the installation during those phases of construction. Additionally, concurrent construction of the Proposed Action combined with the on- and off-installation development projects would result in minor, cumulative increases in vehicle emissions from the increase in traffic.

Biological Resources. Short- and long-term, minor, adverse cumulative impacts would occur on vegetation and the associated habitats from facility construction and demolition associated with the Proposed Action and cumulative projects including the programmed installation development projects and support facilities for the KC-46A mission. Short- and long-term, minor, adverse cumulative impacts would occur from noise during construction and demolition. Long-term cumulative noise impacts on wildlife, including ESA- and MBTA-protected species, would occur from the increase in air operations associated with the Proposed Action and KC-46A program operating out of Fairchild AFB and in the local airspaces. Long-term, minor cumulative adverse impacts on wildlife could occur from the mortality of small less-mobile terrestrial species (e.g., reptiles and small mammals) because of collision with heavy equipment associated with facility construction, demolition, and renovation used for the Proposed Action

and cumulative projects involving development. Additionally, the increase in aircraft operations associated with the KC-135 and KC-46A programs would increase the potential for on-ground and in-air collisions with wildlife such as deer and birds. To minimize this potential for impacts, airfield and flight operations would be conducted in accordance with the existing Fairchild AFB BASH Plan.

Cultural Resources. Construction of the proposed facilities for the Proposed Action and cumulative projects on the installation would have no cumulative impacts on cultural resources. Facility development actions would implement architectural and historical design features to ensure new buildings maintain the existing aesthetic. The aircraft operations component of the Proposed Action also would not impact cultural resources; therefore, cumulative impacts on cultural resources from similar operations would not occur.

Geological Resources. The Proposed Action and cumulative projects involving construction, demolition, and renovation would result in temporarily disturbed ground surfaces and short- and long-term, minor, adverse impacts from soil compaction, disturbance, and erosion. Although soils would be disturbed by earthmoving and other construction activities, impacts would not exceed individual project boundaries and would not result in significant cumulative impacts on soil resources because BMPs, erosion and sediment controls, and other measures would be implemented.

Hazardous Materials and Wastes. The Proposed Action and reasonably foreseeable cumulative construction, demolition, and renovation within Fairchild AFB would result in short-term cumulative increases in the volume of hazardous wastes generated at the installation. Additionally, because some facility construction, demolition, and renovation for the Proposed Action and cumulative projects would coincide with active ERP sites, cumulative short-term, minor, adverse environmental contamination impacts might occur. If implemented concurrently, the increase in air operations and fueling and maintenance activities associated with the Proposed Action and the KC-46A program could increase the potential for minor spills and releases. Operations and maintenance teams would implement BMPs to reduce the potential for spills and ensure quick clean ups. Hazardous materials and wastes would be handled, stored, and disposed of in accordance with applicable regulations and approved plans. Therefore, no significant cumulative adverse impacts on the hazardous materials and wastes management system would occur.

Infrastructure and Transportation. The Proposed Action would have short- and long-term, adverse impacts on utilities from increased consumption during the construction and operations timeframes. However, even when considered with the cumulative projects on the installation, there would be sufficient capacity with the existing utility supplies. Therefore, cumulative impacts from concurrent implementation of these projects would be minor over both the short and long terms. In many cases, newly constructed infrastructure would replace older facilities. Newer, more energy-efficient construction methods would also likely contribute to long-term, minor, beneficial cumulative impacts on electrical supply. Beneficial impacts would also occur from the newly constructed supplemental parking areas and roadway improvements that would support the Proposed Action and cumulative projects. Likewise, more efficient potable water supply and sanitary sewer infrastructure would be implemented in newly constructed or

renovated facilities. Cumulatively, growth on the installation would result in long-term, minor increases in liquid fuel consumption to support KC-135 and KC-46A aircraft flight operations. Short- and long-term, negligible to minor, cumulative impacts on the communications, sanitary sewer, stormwater drainage, transportation, and solid waste management systems would occur from the increase in operations and personnel associated with the Proposed Action when combined with cumulative actions such as the KC-46A program.

Noise. Short- and long-term, minor, adverse, cumulative impacts would occur from noise generated from construction, demolition, and renovation and increases in aircraft operations. The KC-46A program is the cumulative project with the greatest potential to adversely impact noise conditions; however, the cumulative projects when combined with the Proposed Action would not result in significant cumulative impacts on noise.

Land Use. Although the Proposed Action and cumulative projects would result in short- and long-term generation of noise associated with construction and operational activities, these actions would not result in incompatibilities with existing or projected land uses on or off the installation. Cumulative projects would be sited in suitable land use categories and would adhere to the restrictions associated with constraint areas such as noise contours, CZs, APZs, QD arcs, and LUCs. Long-term, beneficial cumulative impacts on land use would result from efficient use of installation land that would not conflict with existing land uses. The projected increases in flight operations resulting from the Proposed Action and KC-46A program would have long-term, minor, adverse impacts on off-installation land use compatibility.

Safety. Short-term, negligible, adverse cumulative impacts on health and safety (e.g., slips, falls, heat exposure, exposure to mechanical, electrical, vision, chemical hazards) would occur from construction, demolition, and renovation associated with the Proposed Action and cumulative projects. Implementation of appropriate safety methods, such as wearing PPE, during these activities would minimize the potential for such impacts. Implementation of the Proposed Action and the KC-46A program would increase air operations out of Fairchild AFB, resulting in increased potential for long-term, minor, adverse cumulative impacts from bird strikes. However, such events likely would be minimal because air operations would adhere to existing BASH protocols.

Socioeconomics. If the Airway Heights recreation complex and STEP mixed use development projects were constructed concurrently with the Proposed Action, short- and long-term, minor, beneficial cumulative impacts on socioeconomics in Spokane County would occur from the increased demand for construction workers. These cumulative projects would also create permanent jobs and provide an economic stimulus to Spokane County. Although the cumulative increase in population would not likely increase the demand for law enforcement, firefighting services, and health care professionals, enrollment in the Spokane Public Schools and Medical Lake School District would likely increase. The Proposed Action in combination with past, present, or reasonably foreseeable actions would not result in any significant cumulative socioeconomic impacts.

Environmental Justice and Sensitive Receptors. There are no disproportionately high and adverse health or environmental impacts on low-income or minority populations, and no disproportionate impacts on child or elderly populations associated with the Proposed Action.

Therefore, no significant or disproportionately high and adverse health or environmental impacts on minority and low-income populations and no significant or disproportionate impacts on child or elderly populations in the vicinity of Fairchild AFB would occur. Consequently, no cumulative impacts on environmental justice and sensitive receptors populations would be occur.

Water Resources. Short- and long-term, minor, adverse, cumulative impacts on water resources would occur from the Proposed Action and cumulative projects involving ground disturbance and increased impervious surfaces. Soil disturbance could result in erosion, sedimentation, and degraded water quality. The cumulative increase in impervious surfaces from the Proposed Action and cumulative projects would be considered a minor contribution in the context of the whole watershed but could be noticeable on a local level. In accordance with federal and state stormwater regulations, the post-development hydrologic conditions of project areas must be maintained as they were during predevelopment. For these project areas, preservation of pre-development hydrologic condition would be ensured through utilization of existing stormwater management systems on the installation and adherence to SWPPPs, ESCPs, and incorporation of other BMPs as well as appropriate low-impact development strategies that would attenuate potentially long-term, adverse impacts on water resources.

4.2 MacDill AFB Cumulative Impacts

4.2.1 Past, Present, and Reasonably Foreseeable Actions

This section qualitatively evaluates the cumulative impacts of the MacDill AFB Alternative by determining the incremental contribution of the MacDill AFB Alternative together with past, present, and reasonably foreseeable actions. **Table 4-2** summarizes the past, present, and reasonably foreseeable actions within the region where interaction with the MacDill AFB Alternative might occur. The table briefly describes each action and presents the proponent, location, and the timeframe (e.g., past, present/ongoing, future) of the action.

Past activities are those actions that occurred within the geographic scope of cumulative impacts and have shaped the current environmental conditions of MacDill AFB and the surrounding area. MacDill AFB was established in 1939 and used to support fighter and bomber wings. Installation facilities and infrastructure have undergone several major periods of construction and reconstruction to accommodate new missions and commands (USAF 2017b). For most resource areas—such as biological resources, geological resources, infrastructure and transportation, hazardous materials and wastes, and water resources—the impacts of past actions are now part of the existing environment and are incorporated in the description of the affected environment in **Section 3**.

Table 4-2. Past, Present, and Reasonably Foreseeable Actions at MacDill AFB and Associated Region

Action	Location	Timeframe	Description
Military Actions			
Beddown eight KC-135s	MacDill AFB	Present	As part of a separate basing process, add eight KC-135s and increase KC-135 flight operations by 50 percent. Associated facility construction, demolition, and renovation would also occur. USAF's decision on this beddown was made subsequent to independent NEPA analysis (USAF 2017b).
Relocate USAR Forces at St. Petersburg-Clearwater International Airport to MacDill AFB	MacDill AFB, St. Petersburg-Clearwater International Airport	Present, Future	Relocate the 5-159 Combat Aviation Company UH-60L helicopter unit with 8 aircraft, the 5-159 Medical Evaluation HH-60L helicopter unit with 15 aircraft and associated detachments, and civilian support personnel from the existing USAR facility at St. Petersburg-Clearwater International Airport to MacDill AFB. All associated USAR personnel, 23 Black Hawk helicopters, vehicles, equipment, and other tangible assets would be relocated, and necessary infrastructure for the units' operations would be constructed in the proposed beddown area, which is in the west-central portion of MacDill AFB. An existing skeet range in the beddown area would be relocated to a former irrigation field in the southeastern portion of MacDill AFB (USAF and USAR 2017).
Programmed Construction Projects	MacDill AFB	Past, Present, Future	Implement various large-scale construction projects including 49th Materiel Maintenance Support Squadron Storage Facility, Special Operations Command Operational Support Facility, Base Civil Engineer complex, coalition village (housing for international representatives), Level 1 Confinement Facility, alert facility, Bayshore gate vehicle screening area, U.S. Central Command headquarters support facility and warehouse, Hangar 2 loading/unloading area, office space warehouse (Building 1092), pest management operations facility, Florida Governmental Utility Authority storage facility and WWTP administration building, fuels management facility, combat aquatic training center, mission support facility, munitions administration facility, pass and identification facility, 6th Security Forces Squadron warehouse facility, Wing headquarters for Building 299, and Youth Activity Center. Some of these construction projects would also include demolition of old facilities. Additionally, a new aquatics center would be constructed, various upgrades would occur at the fitness center, and an addition and alterations would occur at the Fuel Maintenance Nose Dock Hangar 1071 (USAF 2017b).
Programmed Demolition Projects	MacDill AFB	Present, Future	Demolish Building 40, unused taxiways, and miscellaneous pavements and equipment pads within the airfield. After demolition, the Building 40 site would be used for construction of a new facility as addressed under the programmed construction projects (USAF 2017b).

Action	Location	Timeframe	Description
Military Actions (continued)			
Programmed Dormitory Projects	MacDill AFB	Present, Future	Construct two 120-room dormitories, and demolish dormitories 375, 376, and 377 (USAF 2017b).
Programmed Energy Projects	MacDill AFB	Past, Present, Future	Implement various energy-related projects including installation of an energy monitoring and control system with remote monitoring capability for U.S. Special Operations Command headquarters, essential power upgrade for Combatant Command, and installation of a 1 MW photovoltaic power system as part of the Energy Conservation Investment Program (USAF 2017b).
Relocate NOAA	MacDill AFB	Past, Present	Relocate NOAA off-installation. This includes NOAA vacating Hangar 5 and Buildings 9, 24, and 44 and repositioning NOAA aircraft (e.g., P-3, Twin Otter) (USAF 2017b).
U.S. Marine Corps Forces Central Command Projects	MacDill AFB	Present, Future	Construct a 40,000 ft^2 headquarters facility to consolidate U.S. Marine Corps Forces Central Command operations, and lease a separate 40,000 ft^2 facility (USAF 2017b).
Transportation Infrastructure Projects	MacDill AFB	Present, Future	Implement various transportation infrastructure projects including anti-terrorism force protection/transportation improvements; expand a parking lot at Building 805 from 18 to 70 spaces; construct 750 feet of asphalt roadway for the new Marine Radar access road; undertake various infrastructure improvements consisting of widening one roadway, extending two roadways, and demolishing portions of two roadways; construct a traffic control facility with traffic lanes dedicated to privately owned vehicles at the Port Tampa gate; and repair the traffic control system through installation of three complete InSync intersection control systems (USAF 2017b).
Relevant State and Local Actions			
Florida Department of Transportation Roadway Improvement Projects	Hillsborough County	Past, Present, Future	Florida Department of Transportation lists 90 roadway improvement projects to be completed within the next 10 years in the Tampa area including ramp upgrades, interchange improvements, signage, intersection modifications, pedestrian access improvements, lighting upgrades, bridge repairs, installing new signalization, and repaving (FDOT 2018).

Action	Location	Timeframe	Description
Relevant State and Local Actions (continued)			
Tampa International Airport Expansion	Tampa	Past, Present, Future	Phase I of this project involved expansion of the main transfer level to decongest visitor access to amenities, addition of more than 90 new retail stores and restaurants (23 were opened by 2016), upgrades of the existing taxiways and bridges, development of a new consolidated rental car center, and development of a 1.4-mile guide way for the new SkyConnect train that connects the main terminal to economy parking and the new rental car center (Danielson 2018). The SkyConnect Train and rental car centers opened in early 2018. Phase II entails expansion of curbside operations at the main terminal and relocation of the airport's energy plant to accommodate this change.
Johns Hopkins All Children's Research and Education Building	St. Petersburg	Present, Future	This project would construct a 7-story, 225,000 ft^2 facility to house academic offices supporting the Johns Hopkins All Children's Heart Institute, Cancer & Blood Disorders Institute, Brain Protection Sciences, and the Maternal, Fetal and Neonatal Institute. Interior and exterior spaces were at 60 percent completion in 2017. Overall project completion is anticipated in 2018 (Johns Hopkins 2018).
Revitalization of Hyde Park Village	Tampa	Past, Present, Future	This project would include repaved streets; metered, on-street parking; road signalization; village-wide valet parking; improved pedestrian walkways, bicycle lanes and racks; landscaping and development of gathering spaces with outdoor seating; and improved façades (e.g., roof replacements, repainting, new canopies and awnings) of existing buildings. Construction of the proposed two-story Snow Avenue Building, which will host a mix of retail, restaurant, and commercial spaces is expected in 2018 (WS Development 2018).

4.2.2 Cumulative Impacts at MacDill AFB

The following analysis examines the cumulative impacts that would result from the incremental impacts of the MacDill AFB Alternative when combined with the past, present, and reasonably foreseeable future actions identified in **Table 4-2**.

Air Quality. The State of Florida takes into account the impacts of all past, present, and reasonably foreseeable emissions during the development of the State Implementation Plan. The state accounts for all significant stationary, area, and mobile emission sources in the development of this plan. Concurrent implementation of the MacDill AFB Alternative and the operation of 8 KC-135s and 23 USAR helicopters would result in long-term generation of moderate CO and NO_x emissions levels. However, these actions would not significantly contribute to adverse cumulative impacts on air quality within the immediate area or across the region.

Cumulatively, the facility construction, demolition, and renovation associated with the MacDill AFB Alternative and the cumulative development projects listed in **Table 4-2** would result in short-term, intermittent increases in air pollutant levels on or near the installation and the Tampa area during those phases of work. Additionally, concurrent construction of the MacDill AFB Alternative combined with the development projects would result in minor, cumulative increases in vehicle emissions from the increase in traffic.

Biological Resources. Short- and long-term, minor, adverse, cumulative impacts would occur on vegetation from construction and demolition associated with the MacDill AFB Alternative and cumulative projects that include ground disturbance and result in permanent removal of vegetation. Construction, demolition, and renovation would result in temporary noise disturbances and human presence that could adversely affect terrestrial wildlife and would remove potential wildlife habitat. However, there is limited potential wildlife habitat in the MacDill AFB cantonment area, and wildlife are habituated to disturbances because of the moderate development throughout the installation and existing aircraft operations. Short- and long-term, moderate, adverse, cumulative impacts on wildlife would occur. Long-term, cumulative noise impacts on wildlife, including ESA- and MBTA-protected species, would occur from the increase in frequency of short-term loud noise from air operations associated with the MacDill AFB Alternative as well as the beddown of 8 KC-135s and 23 USAR helicopters.

Cultural Resources. Considered together, construction, demolition, and renovation that would support the MacDill AFB Alternative and cumulative projects would have no cumulative impacts on cultural resources on the installation. Construction of new buildings with modern materials could visually intrude upon the aesthetic of the historic district; therefore, to minimize these impacts, buildings would be designed and constructed in accordance with the MacDill AFB design guidelines, which addresses the compatibility of new construction within installation historic districts and minimizes the visual impacts. The aircraft operations component of the MacDill AFB Alternative and cumulative projects also would not impact cultural resources; therefore, cumulative impacts on cultural resources from similar operations would not occur.

Geological Resources. Construction actions to support the MacDill AFB Alternative and cumulative projects would result in temporary ground disturbance and short- and long-term,

minor, adverse impacts on soils from soil compaction, disturbance, and erosion. The total area of soil disturbance resulting from all cumulative projects is unknown but is expected to be considerably larger than that of the MacDill AFB Alternative. Many cumulative projects sited in the MacDill AFB cantonment area would likely occur on previously developed or heavily disturbed land. Most impacts from soil disturbance would not go beyond individual project area boundaries and would not result in significant impacts on soil resources because BMPs, erosion and sediment control practices, and other measures would be implemented. There would be no cumulative impacts on regional geology, topography, or farmland soils.

Hazardous Materials and Waste. Short- and long-term, minor, adverse cumulative impacts would occur from the increase in hazardous wastes generated from the operation and maintenance of the additional KC-135 aircraft and the facility construction, demolition and renovation associated with the MacDill AFB Alternative when combined with the cumulative projects such as the beddown of 8 KC-135s and 23 USAR helicopters and other construction projects. Because some construction activities associated with the MacDill AFB Alternative and cumulative projects would coincide with active ERP sites, short-term, minor, adverse cumulative impacts from environmental contamination might occur. Construction would require the use and onsite storage of hazardous materials such as paints, welding gases, solvents, preservatives, and sealants. Demolition could disturb special hazards depending on the age of the buildings demolished. Additionally, the operation and maintenance of additional KC-135 aircraft (under both the MacDill AFB Alternative and the beddown of eight KC-135s) and USAR helicopters would require hydraulic fluids and petroleum products, such as diesel and gasoline. The MacDill AFB Alternative and cumulative projects would incorporate measures to limit or control hazardous materials and wastes and would comply with all federal, state, and local laws to ensure compliance with the use, storage, transport and disposal of hazardous materials and wastes. Therefore, significant cumulative impacts on hazardous materials and wastes would not occur.

Infrastructure and Transportation. While infrastructure and utility capacity for growth currently exist, additional facilities and increases in personnel could result in long-term, minor, adverse cumulative impacts on transportation and electrical supply systems as well as solid waste management. Net increases in personnel working or living on the installation as a result of the MacDill AFB Alternative and cumulative projects would contribute to long-term, minor to moderate, cumulative impacts on transportation systems, especially at the access gates. Additional vehicles accessing the installation would exacerbate peak hour congestion. Adverse, cumulative impacts on the electrical supply system could occur from increased demand on the system. However, newer, more energy-efficient facilities that would be constructed as part of the MacDill AFB Alternative and cumulative projects, including installation of the energy monitoring and control system and upgrades to the Combatant Command power system, would partially offset the increase in demand for electricity. Additionally, the construction of the new TECO substation and installation of a 1-MW photovoltaic power system would increase electricity supply. Solid waste generated during construction and demolition associated with the MacDill AFB Alternative and cumulative projects could result in short-term, minor, adverse cumulative impacts on solid waste management. Recycling would reduce the amount of solid waste that would be disposed at off-installation landfills. The MacDill AFB Alternative would not

result in an appreciable (i.e., more than negligible) change from the existing conditions for other utilities; therefore, no cumulative impacts would be anticipated.

Noise. Short- and long-term, moderate, adverse, cumulative impacts would occur from noise generated from construction, demolition, and renovation and increases in aircraft operations. The noise conditions presented in **Section 3.7.2** already incorporated the aircraft noise from the 8 KC-135s and 23 USAR helicopters into the comparative baseline used to determine the level of impacts from the MacDill AFB Alternative. Therefore, overall long-term cumulative noise impacts would be similar to that presented in **Section 3.7.3.2**. While the relocation of NOAA aircraft from the installation has slightly decreased air operations at MacDill AFB, the immediate area surrounding the installation would continue to be dominated by aircraft takeoff and landing operations.

Land Use. The MacDill AFB Alternative and cumulative projects would result in short-term, adverse and long-term, adverse and beneficial cumulative impacts on land use. Short-term impacts would result from noise associated with construction; however, the noise would not result in incompatibilities with existing or projected land uses on or off the installation. Cumulative projects would be sited in suitable land use categories and would adhere to the restrictions associated with constraint areas such as noise contours, CZs, APZs, QD arcs, and LUCs. The projected increases in flight operations resulting from the MacDill AFB Alternative and the USAR helicopter program would have long-term, moderate, adverse impacts on off-installation land use compatibility. Long-term, beneficial cumulative impacts would result from efficient use of installation land that would not conflict with existing land uses. The MacDill AFB Alternative would be consistent with the FCMP; therefore, no cumulative coastal zone consistency impacts are anticipated.

Safety. Short-term, negligible, adverse cumulative impacts on health and safety (e.g., slips, falls, heat exposure, exposure to mechanical, electrical, vision, chemical hazards) would occur from construction, demolition, and renovation associated with the MacDill AFB Alternative and cumulative projects. Implementation of appropriate safety methods, such as wearing PPE, during these activities would minimize the potential for such impacts. Implementation of the MacDill AFB Alternative and the addition of 8 KC-135s and 23 USAR helicopters would increase air operations out of MacDill AFB, resulting in increased potential for long-term, minor, adverse cumulative impacts from bird strikes. However, such events would likely be minimal because air operations would adhere to existing BASH protocols.

Socioeconomics. Construction, demolition, and renovation associated with the MacDill AFB Alternative and cumulative projects would result in short-term, minor to moderate, beneficial, cumulative impacts on the local economy and local employment lasting for the duration of such activities. The cumulative increase in personnel on the installation from the MacDill AFB Alternative and the addition of 8 KC-135s and 23 USAR helicopters would have long-term, minor to moderate, beneficial cumulative impacts on the local economy. These projects would provide sustainable employment and earnings to additional individuals and contribute to the indirect purchase of goods and services in the region. Although the cumulative increase in population would not likely increase the demand for law enforcement, firefighting services, and health care professionals, enrollment in the School District of Hillsborough County system would

likely increase. The current off-installation housing market and on-installation unaccompanied housing, which would be added through the cumulative dormitory projects, would accommodate the population increase.

Environmental Justice and Sensitive Receptors. Noise generated from flight operations associated with the MacDill AFB Alternative and the 8 KC-135s and 23 USAR helicopters would result in expanded noise contours that would affect more communities than existing operational noise conditions. However, no cumulative disproportionately high and adverse health or environmental impacts on minority or low-income populations would occur from the MacDill AFB Alternative and cumulative projects. There could be a disproportionate cumulative impact on child and elderly populations; however, this impact would not be significant.

Water Resources. Short- and long-term, minor, adverse, cumulative impacts on water resources would occur from the MacDill AFB Alternative and cumulative projects involving ground disturbance and increased impervious surfaces. Soil disturbance could result in erosion, sedimentation, and degraded water quality. The cumulative increase in impervious surfaces from the MacDill AFB Alternative and cumulative projects would be considered a minor contribution in the context of the whole watershed but could be noticeable on a local level. Additionally, because most of MacDill AFB is within the 100-year floodplain, the MacDill AFB Alternative and many of the cumulative projects would contribute to a net increase of impervious surfaces within the floodplain. In accordance with federal and state stormwater regulations, the post-development hydrologic conditions of project areas must be maintained as they were during predevelopment. For these project areas, preservation of pre-development hydrologic condition would be ensured through utilization of existing stormwater management systems on the installation and adherence to SWPPPs, ESCPs, and incorporation of other BMPs as well as appropriate low-impact development strategies that would attenuate potentially long-term, adverse impacts on water resources.

There might be long-term, adverse cumulative impacts on wetlands and Waters of the United States. The MacDill AFB Alternative would not result in direct impacts on wetlands, although it is possible that cumulative projects could result in impacts. Design, siting, and proper implementation of construction BMPs would minimize potential cumulative impacts.

4.3 Unavoidable Adverse Impacts

Unavoidable adverse impacts would result from the Proposed Action or MacDill AFB Alternative. Energy supplies, although relatively small, would be committed. Fossil fuels, a nonrenewable natural resource, would be used in equipment including the KC-135s. The use of nonrenewable resources under the Proposed Action or MacDill AFB Alternative is an unavoidable occurrence, although not considered significant.

4.4 Compatibility with the Objectives of Federal, Regional, State, and Local Land Use Plans, Policies, and Controls

The Proposed Action or MacDill AFB Alternative would occur on government-owned lands that USAF currently operates. The nature of activities for the Proposed Action or MacDill AFB Alternative would not differ from the current KC-135 activities occurring at the installations.

USAF would continue to follow all requirements related to KC-135 operation and maintenance and would therefore be consistent with current federal, regional, state, and local land use policies and controls.

4.5 Relationship Between Short-term Uses of the Human Environment and Maintenance and Enhancement of Long-term Productivity

Short-term uses of the biophysical components of the human environment include direct, project-related disturbances and direct impacts associated with an increase of population and activity that occurs over less than 5 years. Long-term uses of the human environment include those impacts occurring over more than 5 years, including permanent resource loss.

The Proposed Action or MacDill AFB Alternative would not require short-term resource uses that would result in long-term compromises of productivity. Under the Proposed Action or MacDill AFB Alternative, short-term uses of the environment would result in noise and air emissions from construction equipment and aircraft operations. The addition of 12 KC-135 to Fairchild AFB or MacDill AFB would result in a net increase of flight operations that would either contribute negligibly to the existing long-term, adverse aircraft noise and air emissions impacts on surrounding communities and noise-sensitive receptors at Fairchild AFB, or contribute moderately at MacDill AFB. The impacts on Fairchild AFB would be negligible because the added flight operations would be consistent with existing flight operations out of the installation. Noise impacts from increased flight operations associated with the MacDill AFB Alternative would result in long-term, moderate land use incompatibilities for off-installation areas. Long-term impacts on wildlife species from construction would not occur because of the interim nature of the construction and because species on and near both installations would avoid construction areas and are likely habituated to noise. The nature of activities for the Proposed Action and the MacDill AFB Alternative would not differ from current uses of these areas. Therefore, implementation of the Proposed Action or the MacDill AFB Alternative would not result in significant impacts on sensitive resources. As a result, it is not anticipated that the Proposed Action or the MacDill AFB Alternative would result in any environmental impacts that would permanently narrow the range of beneficial uses of the environment or pose long-term risks to health, safety, or the general welfare of the public.

4.6 Irreversible and Irretrievable Commitment of Resources

NEPA requires the identification of any irreversible and irretrievable commitment of resources that would be involved in the implementation of a proposed action. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the impacts that the uses of these resources could have on future generations. Irreversible impacts primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable timeframe. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of a proposed action (e.g., extinction of a threatened or endangered species, disturbance of a cultural site).

Facility construction associated with the Proposed Action or MacDill AFB Alternative would require consumption of materials typically associated with exterior and interior construction

(e.g., concrete, wiring, piping, insulation, windows). Recycled materials would be used to the extent practicable, and the amount of these materials used would not significantly decrease the availability of the resources. Small amounts of nonrenewable resources would be used; however, these amounts would not be appreciable and would not affect the availability of these resources. The Proposed Action or MacDill AFB Alternative would also require consumption of fuels including some that would be nonrenewable resources (e.g., petroleum-based fossil fuel products for vehicles and aircraft). Neither the Proposed Action nor the MacDill AFB Alternative would significantly decrease the availability of mineral or petroleum resources or the availability of such resources in either alternative's region or the nation.

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A

Stakeholder Consultation and Public Involvement Materials

Notice for Early Public Review

A Notice for Early Public Review was published in the *Tampa Bay Times* on Monday, March 26, 2018, because areas of the MacDill Air Force Base (AFB) Alternative are within the 100-year floodplain. The notice appeared in the local section of the Hillsborough and Pinellas counties editions. The notice, as it appeared in the newspaper, is below. No public comments were received from this notice.

Notice for Early Public Review of a Proposed Action in a 100-Year Floodplain

To: All interested Agencies, Groups, and Individuals

The U.S. Air Force (USAF) proposes to add 12 KC 135 tanker aircraft to the existing fleet of KC 135s at Fairchild Air Force Base (AFB) or, as an alternative, MacDill AFB. The addition of these aircraft to the selected installation would constitute activation of a new air refueling squadron and would include an increase of KC-135 aircraft; associated personnel and dependents; operations and maintenance activities; and facility construction, demolition, and renovation. The purpose of this Proposed Action is to continue to provide Air Mobility Command continental U.S. active duty locations with fully capable air refueling assets to accomplish air refueling and related missions.

The Proposed Action is subject to the requirements and objectives of Executive Order (EO) 11988, Floodplain Management, because the facility construction, demolition, and renovation at MacDill AFB would be located in the floodplain. This notice is required by Section 2(a)(4) of EO 11988 and has been prepared and made available to the public by the USAF in accordance with 32 Code of Federal Regulations (CFR), Part 989.24(c) and USAF Instruction 32-7064, *Integrated Natural Resources Management,* for actions proposed in floodplains or wetlands. The USAF is preparing an Environmental Assessment in accordance with the National Environmental Policy Act (NEPA) and the USAF's Environmental Impact Analysis Process. The USAF will contact the U.S. Fish & Wildlife Service, the State Historic Preservation Officer, and the Florida State Clearinghouse, amongst other agencies, for their input on the Proposed Action and alternatives during the preparation of the Environmental Assessment as a part of the NEPA review process.

Residential, industrial, and institutional land uses on MacDill AFB are within the 100-year floodplain, along with most of the commercial and aviation support areas. Less than three percent of MacDill AFB's land mass is outside the 100-year floodplain and is suitable for development. Construction, demolition, and renovation of buildings, parking lots, and airfield pavement under the MacDill AFB Alternative is estimated to disturb a maximum of 1,700,000 ft2 of floodplain, approximately 0.86 percent of the installation's total acreage located in the floodplain. The proposed construction, demolition, and renovation would be designed to avoid and minimize floodplain impacts to the extent possible. The proposed floodplain displacement is expected to have no effect on flooding potential in the area.

Per EO 11988, Section 2(a)(4), and 32 CFR Part 989.14(l), the USAF requests comments on the Proposed Action and alternatives described above. The public comment period is from March 26 to April 25, 2018. Submit written comments to the 6 AMW Public Affairs, 8209 Hangar Loop Drive, Suite 14, MacDill AFB, FL 33621-5502. The telephone number is (813) 828-2215.

3/26/18

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Section 7 of the Endangered Species Act Consultation

The U.S. Air Force (USAF) is consulting with the U.S. Fish and Wildlife Service (USFWS) regarding effects on federally listed species from the Proposed Action and MacDill AFB Alternative. The Proposed Action would have no effect on federally listed species at Fairchild AFB. The MacDill AFB Alternative may affect, but is not likely to adversely affect, the federally listed red knot, piping plover, and wood stork. Documentation of the USAF's consultation with the USFWS is on the following pages, and responses will be added for the Final Environmental Assessment (EA). The offices contacted for this consultation are as follows:

Fairchild AFB:

U.S. Fish and Wildlife Service
Mr. Eric Rickerson, State Supervisor
510 Desmond Drive, Suite 102
Lacey, Washington 98503

MacDill AFB:

U.S. Fish and Wildlife Service
Mr. Jay Herrington
7915 Baymeadows Way, Suite 200
Jacksonville, Florida 32256-7517

Letter to the USFWS for the Proposed Action at Fairchild AFB:

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

28 Jun 2018

Jeffrey R. Johnson
Deputy Director
92d Mission Support Group
1 E. Bong St., Suite 103
Fairchild AFB WA 99011

Mr. Eric Rickerson
State Supervisor
U.S. Fish and Wildlife Service
510 Desmond Drive, Suite 102
Lacy WA 98503

Dear Mr. Rickerson

The U.S. Air Force (USAF) has prepared a Draft Environmental Assessment (EA) addressing the addition of 12 KC-135 Stratotanker aircraft to Fairchild AFB, Washington (the Proposed Action), or MacDill AFB, Florida (the MacDill AFB Alternative). The Draft EA, included as Attachment, was prepared in accordance with the National Environmental Policy Act. This letter requests your concurrence that the project would not affect listed species and designated critical habitat under U.S. Fish and Wildlife Service (USFWS) jurisdiction at Fairchild AFB, in accordance with Section 7(a) of the Endangered Species Act (ESA) (50 CFR 402.13).

As described in the Draft EA, the proposal would require changes in personnel, airfield operations, and facilities to support the additional KC-135 Stratotanker aircraft. The Proposed Action involves the addition of 12 KC-135 aircraft along with 370 USAF personnel and an estimated 600 dependents. Building demolition, construction, and renovations would be required to support operations and maintenance of the additional aircraft and to provide parking and office space for associated personnel. A 33.3 percent increase in the number of KC-135 operations and a 16.3 percent increase in total aircraft operations at Fairchild AFB is also proposed. Operations would occur within existing airspace and training areas currently utilized by KC-135 aircraft that operate from Fairchild AFB.

To comply with Section 7(a)(2) of the ESA, the Draft EA evaluates potential impacts on four threatened and endangered species that may occur in the region surrounding Fairchild AFB (see Sections 3.2.2.1 and 3.2.3.1 of the Draft EA). No proposed species and no designated or proposed critical habitat for ESA-listed species occur on Fairchild AFB.

Based on the Draft EA, the USAF has determined that the Proposed Action would have no effect on Spalding's catchfly (*Silene spaldingii*), water howellia (*Howellia aquatilis*), yellow-

billed cuckoo (*Coccyzus americanus*), and bull trout (*Salvelinus confluentus*). These species do not occur within an action area for the construction, demolition, and renovation described in the EA and would be unaffected by aircraft operations (see Section 3.2.3.1 of the Draft EA).

To support our administrative record for this project, we seek your concurrence on the finding of no effect for the species identified in this memo. If you require additional information, please contact Mr. Shawn Woodard, 92 CES/CEIE, at (509) 247-8116 or shawn.woodard.1@us.af.mil. Thank you for your support of this project.

Sincerely

JEFFREY R. JOHNSON, GS-13, DAFC
Deputy Director, Mission Support Group

Attachment:
Draft Environmental Assessment for the Addition of 12 KC-135 Aircraft to Fairchild Air Force Base, Washington, or MacDill Air Force Base, Florida

Letter to the USFWS for the MacDill AFB Alternative:

DEPARTMENT OF THE AIR FORCE
6TH AIR MOBILITY WING (AMC)
MACDILL AIR FORCE BASE, FLORIDA

JUN 15 2018

MEMORANDUM FOR U.S. FISH AND WILDLIFE SERVICE
MR. JAY HERRINGTON
7915 BAYMEADOWS WAY, SUITE 200
JACKSONVILLE, FLORIDA 32256-7517

FROM: 6 CES/CL
7621 Hillsborough Loop Drive
MacDill AFB FL 33621-5207

SUBJECT: Analysis of Effects on Threatened, Endangered, and Proposed Species from Addition of 12 KC-135 Aircraft to MacDill Air Force Base (AFB), Florida

1. The U.S. Air Force (USAF) has prepared a Draft Environmental Assessment (EA) addressing the addition of 12 KC-135 Stratotanker aircraft to Fairchild AFB, Washington (the Proposed Action), or MacDill AFB, Florida (the MacDill AFB Alternative). The Draft EA, included as Attachment 1, was prepared in accordance with the National Environmental Policy Act. This letter requests your concurrence that the project is not likely to adversely affect listed species and designated critical habitat under U.S. Fish and Wildlife Service (USFWS) jurisdiction at MacDill AFB, in accordance with Section 7(a) of the Endangered Species Act (ESA) (50 CFR 402.13).

2. As described in the Draft EA, the proposal would require changes in personnel, airfield operations, and facilities to support the additional KC-135 Stratotanker aircraft. The MacDill AFB Alternative involves the addition of 12 KC-135 aircraft along with 395 USAF personnel and an estimated 640 dependents. Building demolition, construction, and renovations would be required to support operations and maintenance of the additional aircraft and to provide parking and office space for associated personnel. A 50.0 percent increase in the number of KC-135 operations and a 29.0 percent increase in total aircraft operations at MacDill AFB is also proposed. Operations would occur within existing airspace and training areas currently utilized by KC-135 aircraft that operate from MacDill AFB.

3. To comply with Section 7(a)(2) of the ESA, the Draft EA evaluates potential impacts on 17 threatened and endangered species that may occur in the region surrounding MacDill AFB (see Sections 3.2.2.2 and 3.2.3.2 of the Draft EA). No proposed species and no designated or proposed critical habitat for ESA-listed species occur on MacDill AFB.

4. Based on the Draft EA, the USAF has determined that the MacDill AFB Alternative would have no effect on the West Indian manatee (*Trichechus manatus*), Florida scrub-jay (*Aphelocoma coerulescens*), Red-cockaded woodpecker (*Picoides borealis*), Eastern indigo snake

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(Drymarchon couperi), Atlantic loggerhead sea turtle (*Caretta caretta*), Green sea turtle (*Chelonia mydas*), Hawksbill sea turtle (*Eretmochelys imbricate*), Leatherback sea turtle (*Dermochelys coriacea*), American alligator (*Alligator mississippiensis*), Brooksville bellflower (*Campanula robinsiae*), Atlantic sturgeon, gulf subspecies (*Acipenser oxyrinchus [=oxyrhynchus] desotoi*), Florida bonamia (*Bonamia grandiflora*), Pygmy fringe-tree (*Chionanthus pygmaeus*), and Florida golden aster (*Chrysopsis floridana*). These species and suitable habitat for these species do not occur within an action area for the construction, demolition, and renovation described in the EA and would be unaffected by aircraft operations.

5. The Draft EA concludes that the MacDill AFB Alternative may affect, but is not likely to adversely affect the Piping plover (*Charadrius melodus*), Rufa red knot (*Calidris canutus rufa*), and Wood stork (*Mycteria Americana*). These listed species could be affected by increased aircraft operations; however, effects would be insignificant because these species are habituated to baseline noise levels and aircraft operations, and the change in frequency and intensity of noise from operations would be negligible (see Section 3.2.3.2 of the Draft EA).

6. We seek your concurrence on the determination that the MacDill AFB Alternative may affect, but is not likely to adversely affect the listed species identified in Paragraph 5; the list of species that have been considered in the attached analysis per 50 CFR 402.12(c); and in accordance with 50 CFR 402.13. To support our administrative record for this project, we also seek your concurrence on the finding of no effect for the species identified in Paragraph 4. If you require additional information, please contact Mr. Eric Vichich, 6 CES/CEIEC at (813) 828-0460. Thank you in advance.

ROBERT T. WYNN, GS-14
Director, 6th Civil Engineer Squadron

Attachment:
1. Draft Environmental Assessment for the Addition of 12 KC-135 Aircraft to Fairchild Air Force Base, Washington, or MacDill Air Force Base, Florida

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Section 106 of the National Historic Preservation Act Consultation

The USAF is consulting with the Washington and Florida State Historical Preservation Officers (SHPOs) to request concurrence that the Proposed Action and MacDill AFB Alternative would have no adverse effect on historic properties under Section 106 of the National Historic Preservation Act. Documentation of the USAF's consultation with the SHPOs is on the following pages, and responses will be added for the Final EA. The offices contacted for this consultation are as follows:

Fairchild AFB:

Dr. Allyson Brooks
State Historic Preservation Officer
Dept. of Archaeology and Historic Preservation
P.O. Box 48343
Olympia, Washington 98504-8343

MacDill AFB:

Mr. Jason Aldridge
Division of Historic Resources
R.A. Gray Building
500 South Bronough Street
Tallahassee, Florida 32399

Letter to the Washington SHPO:

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

28 Jun 2018

Jeffrey R. Johnson
Deputy Director
92d Mission Support Group
1 E. Bong St., Suite 103
Fairchild AFB WA 99011

Dr. Allyson Brooks
State Historic Preservation Officer
Department of Archaeology and Historic Preservation
P.O. Box 48343
Olympia WA 98504-8343

Dear Dr. Brooks

The United States Air Force (Air Force) has prepared a Draft Environmental Assessment (EA) Addressing the Addition of 12 KC-135 Stratotanker Aircraft to Fairchild Air Force Base (AFB), Washington, or MacDill AFB, Florida. The Draft EA, included as Attachment 1, was prepared in accordance with the National Environmental Policy Act. This proposal is an Undertaking subject to Section 106 of the National Historic Preservation Act. Pursuant to 36 Code of Federal Regulations § 800.3, this letter initiates Section 106 consultation for this Undertaking at Fairchild AFB.

As described in the Draft EA, the proposal would require changes in personnel, airfield operations, and facilities to support the additional KC-135 Stratotanker aircraft. Fairchild AFB has defined the area of potential effects (APE) as a 0.25-mile radius around proposed facility projects, as shown in Attachment 2. The APE incorporates areas of potential indirect (e.g., visual) impacts as well as direct effects from proposed construction, renovation, addition, and demolition projects. Fairchild AFB identified three historic properties in the APE that are individually eligible for listing in the National Register of Historic Places (NRHP): Building 2025, Building 2050, and Building 2245. Fairchild AFB also identified one historic-age building in the APE that was recently evaluated as not eligible for NRHP listing: Building 2401. Fairchild AFB will request your concurrence with the assessment of Building 2401 separate from this EA. The former Flight Line Historic District and fourteen former contributing buildings are also within the APE. The Flight Line Historic District is the subject of a 2012 Memorandum of Agreement (MOA) that prescribed actions to mitigate adverse effects from demolition of the district's hangars. Six of the original 20 contributing buildings have been demolished and per the terms of the MOA, the district is no longer eligible for NRHP listing.

Fairchild AFB has determined the Undertaking would have no adverse effect on historic properties, as detailed in the Draft EA. Although the Undertaking would include interior renovations at Building 2050, Fairchild AFB finds that the renovations would not affect character-defining features that make the building eligible for NRHP listing as the renovations would be limited to interior areas only. We request your review of the attached materials and your concurrence with our finding of *no adverse effect* on historic properties. Please contact Mr. Shawn Woodard, Cultural/Natural Resources Manager, 92 CES/CEIE, at shawn.woodard.1@us.af.mil or 509-247-8116 if you have any questions.

Sincerely

Jeffrey R. Johnson

JEFFREY R. JOHNSON, GS-13, DAFC
Deputy Director, Mission Support Group

2 Attachments:
1. *Draft Environmental Assessment for the Addition of 12 KC-135 Aircraft to Fairchild Air Force Base, Washington, or MacDill Air Force Base, Florida*
2. Area of Potential Effect and Identified Historic Properties

Attachments to this letter are included in the administrative record.

Letter to the Florida SHPO:

DEPARTMENT OF THE AIR FORCE
6TH AIR MOBILITY WING (AMC)
MACDILL AIR FORCE BASE, FLORIDA

APR 19 2019

MEMORANDUM FOR DIVISION OF HISTORIC RESOURCES
MR. JASON ALDRIDGE
R.A. GRAY BUILDING
500 SOUTH BRONOUGH STREET
TALLAHASSEE FL 32399

FROM: 6 CES/DD
7621 Hillsborough Loop Drive
MacDill AFB 33621-5207

SUBJECT: Additional KC-135 Aircraft at MacDill AFB

1. MacDill Air Force Base (AFB) is working with Air Mobility Command on a proposal to add a squadron of 12 KC-135 Stratotanker (KC-135) aircraft to the existing fleet at either MacDill AFB or Fairchild AFB, Washington. The proposal would require facilities, airfield operations, and personnel to support the additional KC-135 squadron and is an Undertaking subject to Section 106 of the National Historic Preservation Act. Pursuant to 36 Code of Federal Regulations § 800.3, this letter initiates Section 106 consultation for this Undertaking at MacDill AFB.

2. A detailed description of the Undertaking and area of potential effects (APE) is provided in Attachment 1 to this letter. MacDill AFB has defined the APE as a 0.25-mile radius around proposed facility projects, which incorporates areas of potential indirect (e.g., visual) impacts as well as direct effects from proposed construction, renovation, addition, and demolition projects. MacDill AFB identified 22 historic properties in the APE including the MacDill Field Historic District, 20 contributing resources of the district, and one individually eligible (not within a district) building.

3. MacDill AFB has determined the Undertaking would have no adverse effect on historic properties, as discussed in Attachment 1. Although the Undertaking would involve facility projects in the MacDill Field Historic District and a contributing hangar (Hangar 2), the projects would not affect characteristics that qualify the properties for listing in the National Register of Historic Places. We request your review of the attached materials and your concurrence with our finding of no adverse effect on historic properties.

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4. If you have any questions or require additional information on the Proposed Action, please contact Mr. Eric Vichich, 6 CES/CEIEC at 813-828-0460.

ROBERT D. MOORE, GS-13
Deputy Director, 6th Civil Engineer Squadron

Attachments

1. Description of the Area of Potential Effect and Finding of Effect
2. Figure 1: Proposed Demolition, Construction, and Renovation Areas
   Figure 2: Areas of Potential Effect and Identified Historic Properties
   Figure 3: Street View of Hangar 2

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Attachments to this letter are included in the administrative record.

Response from the Florida SHPO:

FLORIDA DEPARTMENT of STATE

RICK SCOTT
Governor

KEN DETZNER
Secretary of State

Mr. Robert D. Moore
Deputy Director, 6th Civil Engineer Squadron
6 CES/CL
7621 Hillsborough Loop Drive
MacDill Air Force Base, Florida 33621-5207

May 30, 2018

Re: DHR Project File No.: 2018-2160 / Received: May 3, 2018
Proposed Additional KC-135 Aircraft
MacDill Air Force Base, Hillsborough County

Dear Mr. Moore:

The Florida State Historic Preservation Officer reviewed the referenced project in accordance with Section 106 of the *National Historic Preservation Act of 1966*, as amended, and its implementing regulations in *36 CFR Part 800: Protection of Historic Properties*.

We note that the proposed undertaking will involve facility construction, demolition and renovation to support operations and maintenance of the additional KC-135s and to provide parking, housing, and office space for associated personnel.

Based on the information provided, this office concurs that the proposed undertaking will have no adverse effect on historic properties at MacDill Field Air Force Base.

Your interest and cooperation in helping to preserve one of Florida's historic properties is appreciated. If you have any questions concerning our comments, please contact Scott Edwards, Historic Preservationist, by electronic mail *scott.edwards@dos.myflorida.com*, or at 850.245.6333 or 800.847.7278.

Sincerely,

For

Timothy A. Parsons, Ph.D., RPA
Director, Division of Historical Resources
and State Historic Preservation Officer

Division of Historical Resources
R.A. Gray Building • 500 South Bronough Street• Tallahassee, Florida 32399
850.245.6300 • 850.245.6436 (Fax) • FLHeritage.com

Historical Resources

Native American Tribal Consultation

The USAF is consulting with the Coeur d'Alene Tribe, Confederated Tribes of the Colville Reservation, Kalispel Tribe of Indians, Spokane Tribe of Indians, Seminole Tribe of Florida, Miccosukee Tribe of Indians of Florida, and Seminole Nation of Oklahoma. Documentation of the USAF's consultation with these Native American tribes is on the following pages, and any responses the USAF receives will be added for the Final EA. The offices contacted for this consultation are as follows:

Fairchild AFB:

Chief J. Allan
Chairman
Coeur d'Alene Tribe
P.O. Box 408
Plummer, Idaho 83851

Dr. Michael Marchand
Chairman
Confederated Tribes of the Colville Reservation
P.O. Box 150
Nespelem, Washington 99155

Mr. Glen Nenema
Chairman
Kalispel Tribe of Indians
P.O. Box 39
Usk, Washington 99180

Ms. Carol Evans
Chairwoman
Spokane Tribe of Indians
P.O. Box 100
Wellpinit, Washington 99040

MacDill AFB:

Mr. Marcellus W. Osceola Jr.
Chairman
Seminole Tribe of Florida
6300 Stirling Road, Box 1498
Hollywood, Florida 33024

Mr. Billy Cypress
Chairman
Miccosukee Tribe of Indians of Florida
HC 61, SR BOX 68, Old Loop Road
Ochopee, Florida 34141

Mr. Greg Chilcoat
Principal Chief
Seminole Nation of Oklahoma
P.O. Box 1498
Wewoka, Oklahoma 74884

Letter to the Coeur d'Alene Tribe:

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

28 Jun 2018

Jeffrey R. Johnson
Installation Tribal Liaison Officer
1 E. Bong St., Suite 103
Fairchild AFB WA 99011

Chief J. Allan
Chairman
Coeur d'Alene Tribe
P.O. Box 408
Plummer ID 83851

Dear Chief Allan

The United States Air Force (Air Force) has prepared a Draft Environmental Assessment (EA) addressing the Addition of 12 KC-135 Stratotanker Aircraft to Fairchild Air Force Base (AFB), Washington or MacDill AFB, Florida. The Draft EA, included as Attachment 1, was prepared in accordance with the National Environmental Policy Act. We respectfully invite you to participate in government-to-government consultation to exchange information, ask questions, and advise Fairchild AFB of any concerns or suggestions you may have with this proposal. We also invite your participation in consultation under Section 106 of the National Historic Preservation Act to ensure concerns you might have are addressed.

As described in the Draft EA, the proposal would require changes in personnel, airfield operations, and facilities to support the additional KC-135 Stratotanker aircraft. Fairchild AFB has defined an area of potential effects (APE) that is a 0.25-mile radius around proposed facility projects, as shown in Attachment 2. The APE incorporates areas of potential indirect (e.g., visual) impacts as well as direct effects from proposed facility projects.

Based on the results of previously completed cultural resource inventories and consultations, the Air Force is unaware of any archaeological resources or properties of traditional cultural or religious significance within the APE. Proposed ground disturbance areas are within the highly developed airfield and cantonment area, and it is unlikely that unidentified archaeological sites are present within project footprints. As such, Fairchild AFB has determined the Undertaking would have no effect on archaeological historic properties or properties of traditional cultural or religious significance.

We request your review of the attached materials and your comments regarding the identification of historic properties and the assessment of effects in the Draft EA. Although you may provide comments at any time, we request your response within 30 days of receiving this letter so that we can address your concerns in the Final EA. My point of contact for this consultation is Mr. Shawn Woodard, Cultural/Natural Resources Manager, 92 CES/CEIE, shawn.woodard.1@us.af.mil, 509-247-8116, if you have any questions.

Sincerely

Jeffrey R. Johnson

JEFFREY R. JOHNSON, GS-13, DAFC
Installation Tribal Liaison Officer

2 Attachments:
1. *Draft Environmental Assessment for the Addition of 12 KC-135 Aircraft to Fairchild Air Force Base, Washington, or MacDill Air Force Base, Florida*
2. Area of Potential Effect and Identified Historic Properties

Attachments to this letter are included in the administrative record.

Letter to the Confederated Tribes of the Colville Reservation:

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

28 Jun 2018

Jeffrey R. Johnson
Installation Tribal Liaison Officer
1 E. Bong St., Suite 103
Fairchild AFB WA 99011

Dr. Michael Marchand
Chairman
Confederated Tribes of the Colville Reservation
P.O. Box 150
Nespelem WA 99155

Dear Dr. Marchand

The United States Air Force (Air Force) has prepared a Draft Environmental Assessment (EA) addressing the Addition of 12 KC-135 Stratotanker Aircraft to Fairchild Air Force Base (AFB), Washington or MacDill AFB, Florida. The Draft EA, included as Attachment 1, was prepared in accordance with the National Environmental Policy Act. We respectfully invite you to participate in government-to-government consultation to exchange information, ask questions, and advise Fairchild AFB of any concerns or suggestions you may have with this proposal. We also invite your participation in consultation under Section 106 of the National Historic Preservation Act to ensure concerns you might have are addressed.

As described in the Draft EA, the proposal would require changes in personnel, airfield operations, and facilities to support the additional KC-135 Stratotanker aircraft. Fairchild AFB has defined an area of potential effects (APE) that is a 0.25-mile radius around proposed facility projects, as shown in Attachment 2. The APE incorporates areas of potential indirect (e.g., visual) impacts as well as direct effects from proposed facility projects.

Based on the results of previously completed cultural resource inventories and consultations, the Air Force is unaware of any archaeological resources or properties of traditional cultural or religious significance within the APE. Proposed ground disturbance areas are within the highly developed airfield and cantonment area, and it is unlikely that unidentified archaeological sites are present within project footprints. As such, Fairchild AFB has determined the Undertaking would have no effect on archaeological historic properties or properties of traditional cultural or religious significance.

We request your review of the attached materials and your comments regarding the identification of historic properties and the assessment of effects in the Draft EA. Although you may provide comments at any time, we request your response within 30 days of receiving this letter so that we can address your concerns in the Final EA. My point of contact for this consultation is Mr. Shawn Woodard, Cultural/Natural Resources Manager, 92 CES/CEIE, shawn.woodard.1@us.af.mil, 509-247-8116, if you have any questions.

Sincerely

Jeffrey R. Johnson

JEFFREY R. JOHNSON, GS-13, DAFC
Installation Tribal Liaison Officer

2 Attachments:
1. *Draft Environmental Assessment for the Addition of 12 KC-135 Aircraft to Fairchild Air Force Base, Washington, or MacDill Air Force Base, Florida*
2. Area of Potential Effect and Identified Historic Properties

Attachments to this letter are included in the administrative record.

Letter to the Kalispel Tribe of Indians:

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

28 Jun 2018

Jeffrey R. Johnson
Installation Tribal Liaison Officer
1 E. Bong St., Suite 103
Fairchild AFB WA 99011

Mr. Glen Nenema
Chairman
Kalispel Tribe of Indians
P.O. Box 39
Usk WA 99180

Dear Chairman Nenema

The United States Air Force (Air Force) has prepared a Draft Environmental Assessment (EA) addressing the Addition of 12 KC-135 Stratotanker Aircraft to Fairchild Air Force Base (AFB), Washington or MacDill AFB, Florida. The Draft EA, included as Attachment 1, was prepared in accordance with the National Environmental Policy Act. We respectfully invite you to participate in government-to-government consultation to exchange information, ask questions, and advise Fairchild AFB of any concerns or suggestions you may have with this proposal. We also invite your participation in consultation under Section 106 of the National Historic Preservation Act to ensure concerns you might have are addressed.

As described in the Draft EA, the proposal would require changes in personnel, airfield operations, and facilities to support the additional KC-135 Stratotanker aircraft. Fairchild AFB has defined an area of potential effects (APE) that is a 0.25-mile radius around proposed facility projects, as shown in Attachment 2. The APE incorporates areas of potential indirect (e.g., visual) impacts as well as direct effects from proposed facility projects.

Based on the results of previously completed cultural resource inventories and consultations, the Air Force is unaware of any archaeological resources or properties of traditional cultural or religious significance within the APE. Proposed ground disturbance areas are within the highly developed airfield and cantonment area, and it is unlikely that unidentified archaeological sites are present within project footprints. As such, Fairchild AFB has determined the Undertaking would have no effect on archaeological historic properties or properties of traditional cultural or religious significance.

We request your review of the attached materials and your comments regarding the identification of historic properties and the assessment of effects in the Draft EA. Although you may provide comments at any time, we request your response within 30 days of receiving this letter so that we can address your concerns in the Final EA. My point of contact for this consultation is Mr. Shawn Woodard, Cultural/Natural Resources Manager, 92 CES/CEIE, shawn.woodard.1@us.af.mil, 509-247-8116, if you have any questions.

Sincerely

Jeffrey R. Johnson

JEFFREY R. JOHNSON, GS-13, DAFC
Installation Tribal Liaison Officer

2 Attachments:
1. *Draft Environmental Assessment for the Addition of 12 KC-135 Aircraft to Fairchild Air Force Base, Washington, or MacDill Air Force Base, Florida*
2. Area of Potential Effect and Identified Historic Properties

Attachments to this letter are included in the administrative record.

Letter to the Spokane Tribe of Indians:

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

28 Jun 2018

Jeffrey R. Johnson
Installation Tribal Liaison Officer
1 E. Bong St., Suite 103
Fairchild AFB WA 99011

Ms. Carol Evans
Chairwoman
Spokane Tribe of Indians
P.O. Box 100
Wellpinit WA 99040

Dear Chairwoman Evans

The United States Air Force (Air Force) has prepared a Draft Environmental Assessment (EA) addressing the Addition of 12 KC-135 Stratotanker Aircraft to Fairchild Air Force Base (AFB), Washington or MacDill AFB, Florida. The Draft EA, included as Attachment 1, was prepared in accordance with the National Environmental Policy Act. We respectfully invite you to participate in government-to-government consultation to exchange information, ask questions, and advise Fairchild AFB of any concerns or suggestions you may have with this proposal. We also invite your participation in consultation under Section 106 of the National Historic Preservation Act to ensure concerns you might have are addressed.

As described in the Draft EA, the proposal would require changes in personnel, airfield operations, and facilities to support the additional KC-135 Stratotanker aircraft. Fairchild AFB has defined an area of potential effects (APE) that is a 0.25-mile radius around proposed facility projects, as shown in Attachment 2. The APE incorporates areas of potential indirect (e.g., visual) impacts as well as direct effects from proposed facility projects.

Based on the results of previously completed cultural resource inventories and consultations, the Air Force is unaware of any archaeological resources or properties of traditional cultural or religious significance within the APE. Proposed ground disturbance areas are within the highly developed airfield and cantonment area, and it is unlikely that unidentified archaeological sites are present within project footprints. As such, Fairchild AFB has determined the Undertaking would have no effect on archaeological historic properties or properties of traditional cultural or religious significance.

We request your review of the attached materials and your comments regarding the identification of historic properties and the assessment of effects in the Draft EA. Although you may provide comments at any time, we request your response within 30 days of receiving this letter so that we can address your concerns in the Final EA. My point of contact for this consultation is Mr. Shawn Woodard, Cultural/Natural Resources Manager, 92 CES/CEIE, shawn.woodard.1@us.af.mil, 509-247-8116, if you have any questions.

Sincerely

Jeffrey R. Johnson

JEFFREY R. JOHNSON, GS-13, DAFC
Installation Tribal Liaison Officer

2 Attachments:
1. *Draft Environmental Assessment for the Addition of 12 KC-135 Aircraft to Fairchild Air Force Base, Washington, or MacDill Air Force Base, Florida*
2. Area of Potential Effect and Identified Historic Properties

Attachments to this letter are included in the administrative record.

Letter to the Seminole Tribe of Florida:

DEPARTMENT OF THE AIR FORCE
6TH AIR MOBILITY WING (AMC)
MACDILL AIR FORCE BASE, FLORIDA

MAY 0 2 2018

Colonel April D. Vogel
Commander, 6th Air Mobility Wing
8208 Hangar Loop Drive, Suite 1
MacDill AFB Florida 33621

Mr. Marcellus W. Osceola Jr.
Chairman
Seminole Tribe of Florida
6300 Stirling Road
Hollywood Florida 33024

Dear Chairman Osceola

The United States Air Force is preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate a proposal by Air Mobility Command to add a squadron of 12 KC-135 Stratotanker aircraft to the existing fleet at either Fairchild Air Force Base (AFB), Washington, or MacDill AFB, Florida. We respectfully invite you to participate in government-to-government consultation to exchange information, ask questions, and advise MacDill AFB of any concerns or suggestions you may have with this proposal. We also invite your participation in consultation under Section 106 of the National Historic Preservation Act to ensure concerns you might have are addressed.

This letter provides some basic information on the proposal so that you may provide early input that can assist us with developing the EA and complying with Section 106 of the National Historic Preservation Act. The proposal would require changes in personnel, airfield operations, and facilities at MacDill AFB if the installation is selected for the additional KC-135 Stratotanker aircraft. The population would increase by an estimated 1,035 personnel and dependents in the year 2020. Airfield operations would increase by 29.0 percent. Proposed facility projects include building renovation, building additions, new construction, and demolition. These projects are shown in Attachment 1. Facility projects have potential to affect historic properties during ground disturbance or as part of building alterations. MacDill AFB has defined an area of potential effects (APE) that is a 0.25-mile radius around proposed facility projects, as shown in Attachment 2. The APE incorporates areas of potential indirect (e.g., visual) impacts as well as direct effects from proposed facility projects.

Based on the results of previously completed cultural resource inventories and consultations, the Air Force is unaware of any archaeological resources or properties of traditional cultural or religious significance within the APE. Proposed ground disturbance areas

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are within the highly developed airfield and cantonment area, and it is unlikely that unidentified archaeological sites are present within project footprints. However, a cultural monitor would be present during construction in any undeveloped areas. As such, MacDill AFB has determined the project would have no effect on archaeological historic properties or properties of traditional cultural or religious significance.

We request your review of the attached materials and your comments regarding the proposal, the identification of historic properties, and the assessment of effects. Although you may provide comments at any time, we request your response within 30 days of receiving this letter so that we can address your concerns in the EA. My point of contact for this consultation is Mr. Eric Vichich, Cultural Resources Manager, 6 CES/CEIEC, eric.vichich.ctr@us.af.mil, (813) 828-0460, if you have any questions.

Sincerely

APRIL D. VOGEL, Colonel, USAF
Commander

Attachments:
1. Proposed Demolition, Construction, and Renovation Areas at MacDill AFB
2. Area of Potential Effect and Identified Historic Properties

Attachments to this letter are included in the administrative record.

Response from the Seminole Tribe of Florida:

From: Victoria Menchaca [mailto:VictoriaMenchaca@semtribe.com]
Sent: Friday, June 22, 2018 11:35 AM
To: VICHICH, ERIC J CTR USAF AMC 6 CES/CEIEC <eric.vichich.ctr@us.af.mil>
Subject: [Non-DoD Source] RE: Draft EA Additional KC-135s at MacDill AFB

SEMINOLE TRIBE OF FLORIDA
TRIBAL HISTORIC PRESERVATION OFFICE
AH-TAH-THI-KI MUSEUM

TRIBAL HISTORIC PRESERVATION OFFICE
SEMINOLE TRIBE OF FLORIDA
AH-TAH-THI-KI MUSEUM
30290 JOSIE BILLIE HIGHWAY
PMB 1004
CLEWISTON, FL 33440
THPO PHONE: (863) 983-6549
MUSEUM PHONE: (863) 902-1113
FAX: (863) 902-1117
THPO WEBSITE: WWW.STOFTHPO.COM
MUSEUM WEBSITE: WWW.AHTAHTHIKI.COM

TRIBAL OFFICERS
MARCELLUS W. OSCEOLA JR
CHAIRMAN
MITCHELL CYPRESS
VICE CHAIRMAN
LAVONNE ROSE
SECRETARY
PETER A. HAHN
TREASURER

June 22, 2018

Eric Vichich
Installation Cultural Resources Manager
6th Air Mobility Wing
MacDill AFB FL

Subject: USAF MacDill Addition of KC-135 Stratotanker Aircrafts, Hillsborough County FL
THPO #: 0030974

Dear Mr. Vichich,

Thank you for contacting the Seminole Tribe of Florida – Tribal Historic Preservation Office (STOF-THPO) regarding the USAF MacDill Addition of KC-135 Stratotanker Aircrafts, Hillsborough County FL. The proposed undertaking does fall within in the STOF Area of Interest. We have reviewed the documents provided and completed our assessment pursuant to Section 106 of the National Historic Preservation Act and its implementing authority, 36 CFR 800. We have no objections to the project at this time. However, please notify us if any archaeological, historical, or burial resources are inadvertently discovered.

Thank you and feel free to contact us with any further questions.

Respectfully,

Victoria L. Menchaca, MA, Compliance Review Specialist
STOF-THPO, Compliance Review Section
30290 Josie Billie Hwy, PMB 1004
Clewiston, FL 33440
Office: 863-983-6549 ext 12216
Email: victoriamenchaca@semtribe.com
Web: www.stofthpo.com

Letter to the Miccosukee Tribe of Indians of Florida:

DEPARTMENT OF THE AIR FORCE
6TH AIR MOBILITY WING (AMC)
MACDILL AIR FORCE BASE, FLORIDA

MAY 0 2 2018

Colonel April D. Vogel
Commander, 6th Air Mobility Wing
8208 Hangar Loop Drive, Suite 1
MacDill AFB Florida 33621

Mr. Billy Cypress
Chairman
Miccosukee Tribe of Indians of Florida
HC 61, SR BOX 68, Old Loop Road
Ochopee Florida 34141

Dear Chairman Cypress

The United States Air Force is preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate a proposal by Air Mobility Command to add a squadron of 12 KC-135 Stratotanker aircraft to the existing fleet at either Fairchild Air Force Base (AFB), Washington, or MacDill AFB, Florida. We respectfully invite you to participate in government-to-government consultation to exchange information, ask questions, and advise MacDill AFB of any concerns or suggestions you may have with this proposal. We also invite your participation in consultation under Section 106 of the National Historic Preservation Act to ensure concerns you might have are addressed.

This letter provides some basic information on the proposal so that you may provide early input that can assist us with developing the EA and complying with Section 106 of the National Historic Preservation Act. The proposal would require changes in personnel, airfield operations, and facilities at MacDill AFB if the installation is selected for the additional KC-135 Stratotanker aircraft. The population would increase by an estimated 1,035 personnel and dependents in the year 2020. Airfield operations would increase by 29.0 percent. Proposed facility projects include building renovation, building additions, new construction, and demolition. These projects are shown in Attachment 1. Facility projects have potential to affect historic properties during ground disturbance or as part of building alterations. MacDill AFB has defined an area of potential effects (APE) that is a 0.25-mile radius around proposed facility projects, as shown in Attachment 2. The APE incorporates areas of potential indirect (e.g., visual) impacts as well as direct effects from proposed facility projects.

Based on the results of previously completed cultural resource inventories and consultations, the Air Force is unaware of any archaeological resources or properties of traditional cultural or religious significance within the APE. Proposed ground disturbance areas

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are within the highly developed airfield and cantonment area, and it is unlikely that unidentified archaeological sites are present within project footprints. However, a cultural monitor would be present during construction in any undeveloped areas. As such, MacDill AFB has determined the project would have no effect on archaeological historic properties or properties of traditional cultural or religious significance.

We request your review of the attached materials and your comments regarding the proposal, the identification of historic properties, and the assessment of effects. Although you may provide comments at any time, we request your response within 30 days of receiving this letter so that we can address your concerns in the EA. My point of contact for this consultation is

Mr. Eric Vichich, Cultural Resources Manager, 6 CES/CEIEC, eric.vichich.ctr@us.af.mil, (813) 828-0460, if you have any questions.

Sincerely

APRIL D. VOGEL, Colonel, USAF
Commander

Attachments:
1. Proposed Demolition, Construction, and Renovation Areas at MacDill AFB
2. Area of Potential Effect and Identified Historic Properties

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Attachments to this letter are included in the administrative record.

Response from the Miccosukee Tribe of Indians of Florida:

MacDill Air Force Base Environmental
6 CES/CEIEC
7621 Hillsborough Loop Dr.
MacDill AFB, FL 33621

MEMORANDUM FOR RECORD

FROM: 6 CES/CEIEC

SUBJECT: Consultation with Miccosukee Tribe of Indians Regarding Additional KC-135 Project Alternative at MacDill AFB

1. A consultation letter for the subject project was sent to the Miccosukee Tribe of Indians on 4 May 2018.

2. On 24 May 2018, I received a follow-up phone call from Mr. Fred Dayhoff, the Section 106 Native American Grave Protection and Repatriation Act (NAGPRA) representative for the Miccosukee Tribe of Indians. Mr. Dayhoff indicated he received the letter and has no objections to the project. He expressed his desire that we consult with the State Historic Preservation Officer (SHPO) and comply with their recommendations.

VICHICH.ERIC.J.1285560558

ERIC J. VICHICH, Contractor
Cultural Resources Manager, 6th Civil Engineer Squadron

Commit to Serve, Commit to Conserve

Letter to the Seminole Nation of Oklahoma:

DEPARTMENT OF THE AIR FORCE
6TH AIR MOBILITY WING (AMC)
MACDILL AIR FORCE BASE, FLORIDA

MAY 0 2 2018

Colonel April D. Vogel
Commander, 6th Air Mobility Wing
8208 Hangar Loop Drive, Suite 1
MacDill AFB Florida 33621

Mr. Greg Chilcoat
Principal Chief
Seminole Nation of Oklahoma
P.O. Box 1498
Wewoka Oklahoma 74884

Dear Chief Chilcoat

The United States Air Force is preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate a proposal by Air Mobility Command to add a squadron of 12 KC-135 Stratotanker aircraft to the existing fleet at either Fairchild Air Force Base (AFB), Washington, or MacDill AFB, Florida. We respectfully invite you to participate in government-to-government consultation to exchange information, ask questions, and advise MacDill AFB of any concerns or suggestions you may have with this proposal. We also invite your participation in consultation under Section 106 of the National Historic Preservation Act to ensure concerns you might have are addressed.

This letter provides some basic information on the proposal so that you may provide early input that can assist us with developing the EA and complying with Section 106 of the National Historic Preservation Act. The proposal would require changes in personnel, airfield operations, and facilities at MacDill AFB if the installation is selected for the additional KC-135 Stratotanker aircraft. The population would increase by an estimated 1,035 personnel and dependents in the year 2020. Airfield operations would increase by 29.0 percent. Proposed facility projects include building renovation, building additions, new construction, and demolition. These projects are shown in Attachment 1. Facility projects have potential to affect historic properties during ground disturbance or as part of building alterations. MacDill AFB has defined an area of potential effects (APE) that is a 0.25-mile radius around proposed facility projects, as shown in Attachment 2. The APE incorporates areas of potential indirect (e.g., visual) impacts as well as direct effects from proposed facility projects.

Based on the results of previously completed cultural resource inventories and consultations, the Air Force is unaware of any archaeological resources or properties of traditional cultural or religious significance within the APE. Proposed ground disturbance areas

MISSION FOCUSED...VALUED AIRMEN

are within the highly developed airfield and cantonment area, and it is unlikely that unidentified archaeological sites are present within project footprints. However, a cultural monitor would be present during construction in any undeveloped areas. As such, MacDill AFB has determined the project would have no effect on archaeological historic properties or properties of traditional cultural or religious significance.

We request your review of the attached materials and your comments regarding the proposal, the identification of historic properties, and the assessment of effects. Although you may provide comments at any time, we request your response within 30 days of receiving this letter so that we can address your concerns in the EA. My point of contact for this consultation is Mr. Eric Vichich, Cultural Resources Manager, 6 CES/CEIEC, eric.vichich.ctr@us.af.mil, (813) 828-0460, if you have any questions.

Sincerely

APRIL D. VOGEL, Colonel, USAF
Commander

Attachments:
1. Proposed Demolition, Construction, and Renovation Areas at MacDill AFB
2. Area of Potential Effect and Identified Historic Properties

MISSION FOCUSED...VALUED AIRMEN

Attachments to this letter are included in the administrative record.

Response from the Seminole Nation of Oklahoma:

VICHICH, ERIC J CTR USAF AMC 6 CES/CEIEC

From: Theodore Isham <isham.t@sno-nsn.gov>
Sent: Monday, June 25, 2018 1:14 PM
To: VICHICH, ERIC J CTR USAF AMC 6 CES/CEIEC
Subject: [Non-DoD Source] RE: Draft EA Additional KC-135s at MacDill AFB

This Opinion is being provided by Seminole Nation of Oklahoma's Cultural Advisor, pursuant to authority vested by the Seminole Nation of Oklahoma General Council. The Seminole Nation of Oklahoma is an independently Federally-Recognized Indian Nation headquartered in Wewoka, OK.
The Seminole Nation of Oklahoma wishes consultation party status on this project.

In keeping with the National Environmental Policy Act (NEPA)d, and Section 106 of the National Historic Preservation Act (NHPA), 36 CFR Part 800, this letter is to acknowledge that the Seminole Nation of Oklahoma has received notice of the proposed project at the above mentioned location.

The Seminole Nation of Oklahoma is not aware of any sites of historical significance in the APE of this project as stated. The Seminole Nation of Oklahoma will concur with USAF's recommendation as the outlined restrictions are followed to have a cultural monitor present in undeveloped areas. Therefore, we have no comment on the project as proposed, but do want to be a consulting party.

We do request that if cultural or archeological resource materials are encountered at all activity cease and the Seminole Nation of Oklahoma and other appropriate agencies be contacted immediately.

Furthermore, due to the historic presence of our people in the project area, inadvertent discoveries of human remains and related NAGPRA items may occur, even in areas of existing or prior development. Should this occur we request all work cease and the Seminole Nation of Oklahoma and other appropriate agencies be immediately notified.

Theodore Isham
Seminole Nation of Oklahoma
Historic Preservation Officer
PO Box 1498
Seminole, Ok 74868
Phone: 405-234-5218
Cell: 918-304-9443
e-mail: isham.t@sno-nsn.gov

Draft EA Stakeholder Distribution List

The USAF distributed the Draft EA and Draft Finding of No Significant Impact/Finding of No Practicable Alternative (FONSI/FONPA) to relevant federal, state, and local government agencies for a 30-day review period. The list of federal, state, and local government agencies contacted as part of this distribution is below. The distribution memorandums that the USAF sent are on the following pages, and any responses the USAF receives will be added for the Final EA.

Federal Agency Contacts

Fairchild AFB:

Mr. David Suomi
Regional Administrator
Federal Aviation Administration
Northwest Mountain Region
1601 Lind Avenue Southwest
Renton, Washington 98057

Ms. Jill Nogi
NEPA Manager
USEPA, Region 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101

MacDill AFB:

Mr. Michael O'Harra
Regional Administrator
Federal Aviation Administration
Southern Region
P.O. Box 20636
Atlanta, Georgia 30320

Mr. Chris Militscher
Chief of the NEPA Program Office
USEPA, Region 4
61 Forsyth Street SW
Atlanta, Georgia 30303

State Agency Contacts

Fairchild AFB:

Mr. Grant Pfeifer
Director
Washington Department of Ecology
Eastern Regional Office
4601 North Monroe Street
Spokane, Washington 99205-1295

Mr. Steve Pozzanghera
Regional Director
Washington Department of Fish and Wildlife, Region 1
2315 North Discovery Place
Spokane Valley, Washington 99216-1566

MacDill AFB:

Mr. Chris Stahl
Florida State Clearinghouse
Office of Intergovernmental Programs
Florida Dept. of Environmental Protection
2600 Blair Stone Road, Mail Station 47
Tallahassee, Florida 32399-2400
(submitted by email to: state.clearinghouse@dep.state.fl.us)

Local Agency Contacts

Fairchild AFB:

Mr. John Pederson
Planning Director
Spokane County Building & Planning
1026 West Broadway Avenue
Spokane, Washington 99260

Mr. Derrick Braaten
Development Services Director
City of Airway Heights: Planning Department
1208 S. Lundstrom Street
Airway Heights, Washington 99001

Ms. Lisa Key
Development Services Director
City of Spokane: Planning and Development
808 W. Spokane Falls Boulevard
Spokane, Washington 99201

Mr. Timothy Ames
Superintendent
Medical Lake School District
P.O. Box 128
Medical Lake, Washington 99022

Mr. Matt Breen
Planning & Engineering
Spokane International Airport
9000 West Airport Drive, Suite 204
Spokane, Washington 99224

Mr. Joe Southwell
Air Quality Engineer
Spokane Regional Clean Air Agency
3104 E. Augusta Avenue
Spokane, Washington 99207

MacDill AFB:

Mr. Thomas R.P. Snelling, AICP
Director
Tampa Dept. of Planning and Development
1400 North Boulevard
Tampa, Florida 33607

Distribution memorandum for Fairchild AFB:

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

MEMORANDUM FOR DISTRIBUTION

29 June 2018

FROM: 92 CES/CD
100 W. Ent Street, Suite 155
Fairchild AFB WA 99011

SUBJECT: Distribution of *Draft Environmental Assessment Addressing Addition of 12 KC-135 Aircraft to Fairchild Air Force Base, Washington, or MacDill Air Force Base, Florida*

1. The U.S. Air Force (USAF) has prepared a Draft Environmental Assessment (EA) addressing the addition of 12 KC-135 Stratotanker aircraft to Fairchild AFB, Washington (the Proposed Action), or MacDill AFB, Florida (the MacDill AFB Alternative). The addition of these aircraft to the selected installation would constitute activation of a new air refueling squadron and would include an increase of KC-135 aircraft; associated personnel and dependents; operations and maintenance activities; and facility construction, demolition, and renovation.

2. The Draft EA, included as Attachment 1, was prepared in accordance with the National Environmental Policy Act. The analysis contained within the Draft EA indicates that no significant impacts would occur from the Proposed Action at Fairchild AFB.

3. In accordance with Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, as amended by EO 12416 with the same title, we request your participation and comments on the Draft EA and Draft Finding of No Significant Impact (FONSI)/Finding of No Practical Alternative (FONPA). Your comments will be considered in the development of the Final EA and USAF's decision on whether or not to sign the FONSI/FONPA and proceed with the Proposed Action or the MacDill AFB Alternative.

4. Please provide comments on the Draft EA and Draft FONSI/FONPA no later than 30 days from receipt of this correspondence. Address all comments to 92 ARW Public Affairs, 1 East Bong Street, Suite 228, Fairchild AFB, WA 99011. Comments are encouraged to be sent by email to 92arw.pa@us.af.mil. The telephone number is (509) 247-5705. Thank you in advance.

Ronald R. Daniels

RONALD R. DANIELS, GS-14, DAF
Deputy Base Civil Engineer

Attachments:
1. *Draft Environmental Assessment for the Addition of 12 KC-135 Aircraft to Fairchild Air Force Base, Washington, or MacDill Air Force Base, Florida.*
2. Draft FONSI/FONPA

Distribution memorandum for MacDill AFB:

DEPARTMENT OF THE AIR FORCE
6TH AIR MOBILITY WING (AMC)
MACDILL AIR FORCE BASE, FLORIDA

JUN 15 2018

MEMORANDUM FOR DISTRIBUTION

FROM: 6 CES/CL
7621 Hillsborough Loop Drive
MacDill AFB FL 33621-5207

SUBJECT: Distribution of the *Draft Environmental Assessment Addressing the Addition of 12 KC-135 Aircraft to Fairchild Air Force Base, Washington, or MacDill Air Force Base, Florida*

1. The U.S. Air Force (USAF) has prepared a Draft Environmental Assessment (EA) addressing the addition of 12 KC-135 Stratotanker aircraft to Fairchild AFB, Washington (the Proposed Action), or MacDill AFB, Florida (the MacDill AFB Alternative). The addition of these aircraft to the selected installation would constitute activation of a new air refueling squadron and would include an increase of KC-135 aircraft; associated personnel and dependents; operations and maintenance activities; and facility construction, demolition, and renovation.

2. The Draft EA, included as Attachment 1, was prepared in accordance with the National Environmental Policy Act. The analysis contained within the Draft EA indicates that no significant impacts would occur from the Proposed Action or the MacDill AFB Alternative and a Finding of No Significant Impact (FONSI) would be appropriate. Because less than three percent of MacDill AFB is outside of the 100-year floodplain and is suitable for development, there are no practicable siting options on MacDill AFB that avoid the 100-year floodplain. As such, a Finding of No Practicable Alternative (FONPA) is necessary for the MacDill AFB Alternative should that alternative be selected for implementation.

3. In accordance with Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, as amended by EO 12416 with the same title, we request your participation and comments on the Draft EA and Draft FONSI/FONPA. Your comments will be considered in the development of the Final EA and USAF's decision on whether or not to sign the FONSI/FONPA and proceed with the Proposed Action or MacDill AFB Alternative. A Federal Consistency Determination under the Coastal Zone Management Act for the MacDill AFB Alternative is included in Appendix C of the Draft EA.

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4. Please provide comments on the Draft EA and Draft FONSI/FONPA no later than 30 days from receipt of this correspondence. Address all comments to 6 AMW Public Affairs, 8209 Hangar Loop Drive, Suite 14, MacDill AFB, FL 33621. Comments are encouraged to be sent by email to 6.amw.pa@us.af.mil. The telephone number is (813) 828-2215. Thank you in advance.

ROBERT T. WYNN, GS-14
Director, 6th Civil EngineerSquadron

Attachment:
1. *Draft Environmental Assessment for the Addition of 12 KC-135 Aircraft to Fairchild Air Force Base, Washington, or MacDill Air Force Base, Florida.* July 2018. Including Draft FONSI/FONPA.

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Notice of Availability for the Draft EA

Notice of availabilities announcing the Draft EA and Draft FONSI/FONPA were available for a 30-day public comment period were published in the *Spokesman-Review* and *Tampa Bay Times.* The notices are on the following pages, and any comments the USAF receives will be added for the Final EA.

The Draft EA and Draft FONSI/FONPA were made available to the public in hardcopy format at the following locations:

Fairchild AFB:

Fairchild AFB Library
2 W. Castle Street
Fairchild AFB, Washington 99011

Spokane Public Library
906 W. Main Avenue
Spokane, Washington 99201-0976

Airway Heights Library
1213 S. Lundstrom Street
Airway Heights, Washington 99001

MacDill AFB:

MacDill AFB Library
8102 Condor Street, Building 252
MacDill AFB, Florida 33621

John F. Germany Public Library
900 North Ashley Drive
Tampa, Florida 33602-3704

The Draft EA and Draft FONSI/FONPA also were made available to the public in electronic format on the following websites:

http://www.fairchild.af.mil/about/fact-sheets/

http://www.macdill.af.mil/EIAP.aspx

Notice of Availability for the *Spokesman-Review*:

Notice of Availability

Draft Environmental Assessment (EA) Addressing the Addition of 12 KC-135 Aircraft to Fairchild Air Force Base (AFB), Washington, or MacDill AFB, Florida

The U.S. Air Force (USAF) announces the availability of, and invites public comments on, the Draft EA evaluating the addition of 12 KC-135 Stratotanker (KC-135) aircraft to the existing fleet of KC-135s at Fairchild AFB (the Proposed Action) or MacDill AFB (the MacDill AFB Alternative). The addition of these aircraft to the selected installation would constitute activation of a new air refueling squadron and would include an increase of KC-135 aircraft; associated personnel and dependents; operations and maintenance activities; and facility construction, demolition, and renovation.

The analysis contained in the Draft EA indicates the Proposed Action and MacDill AFB Alternative would not have a significant impact on the environment and a Finding of No Significant Impact/Finding of No Practicable Alternative (FONSI/FONPA) would be appropriate.

The USAF invites public participation through the solicitation of comments on the Draft EA and Draft FONSI/FONPA. Comments are invited and will be accepted for 30 days from the publication of this notice. The Draft EA and Draft FONSI/FONPA are available on the internet at http://www.fairchild.af.mil/about/fact-sheets/. Hard copies also are available at the following local libraries:

Fairchild AFB Library	**Spokane Public Library**	**Airway Heights Library**
2 W. Castle Street	**906 W. Main Avenue**	**1213 S. Lundstrom Street**
Fairchild AFB, WA 99011	**Spokane, WA 99201**	**Airway Heights, WA 99001**

Please provide comments to 92 ARW Public Affairs, 1 East Bong Street, Suite 228, Fairchild AFB, WA 99011. Comments are encouraged to be sent by email to 92arw.pa@us.af.mil. The telephone number is (509) 247-5705.

Notice of Availability for the *Tampa Bay Times*:

Notice of Availability

Draft Environmental Assessment (EA) Addressing the Addition of 12 KC-135 Aircraft to Fairchild Air Force Base (AFB), Washington, or MacDill AFB, Florida

The U.S. Air Force (USAF) announces the availability of, and invites public comments on, the Draft EA evaluating the addition of 12 KC-135 Stratotanker (KC-135) aircraft to the existing fleet of KC-135s at Fairchild AFB (the Proposed Action) or MacDill AFB (the MacDill AFB Alternative). The addition of these aircraft to the selected installation would constitute activation of a new air refueling squadron and would include an increase of KC-135 aircraft; associated personnel and dependents; operations and maintenance activities; and facility construction, demolition, and renovation.

The analysis contained in the Draft EA indicates the Proposed Action and MacDill AFB Alternative would not have a significant impact on the environment and a Finding of No Significant Impact/Finding of No Practicable Alternative (FONSI/FONPA) would be appropriate.

The USAF invites public participation through the solicitation of comments on the Draft EA and Draft FONSI/FONPA. Comments are invited and will be accepted for 30 days from the publication of this notice. The Draft EA and Draft FONSI/FONPA are available on the internet at http://www.macdill.af.mil/EIAP.aspx. Hard copies also are available at the following local libraries:

MacDill AFB Library
8102 Condor Street
Building 252
MacDill AFB, FL 33621

John F. Germany Public Library
900 North Ashley Drive
Tampa, FL 33602

Please provide comments to 6 AMW Public Affairs, 8209 Hangar Loop Drive, Suite 14, MacDill AFB, FL 33621. Comments are encouraged to be sent by email to 6.amw.pa@us.af.mil. The telephone number is (813) 828-2215.

B

Air Conformity Applicability Model Reports

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA) – PROPOSED ACTION

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:
Base: FAIRCHILD AFB
County(s): Spokane
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Proposed Action – Fairchild AFB

c. Project Number/s (if applicable): Increased operations, construction/renovation, demolition

d. Projected Action Start Date: 1 / 2018

e. Action Description: See Section 2 of EA.

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable
__X__ not applicable

Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions.

"Air Quality Indicators" were used to provide an indication of the significance of potential impacts to air quality. These air quality indicators are EPA General Conformity Rule (GCR) thresholds (de minimis levels) that are applied out of context to their intended use. Therefore, these indicators do not trigger a regulatory requirement; however, they provide a warning that the action is potentially significant. It is important to note that these indicators only provide a clue to the potential impacts to air quality.

Given the GCR de minimis threshold values are the maximum net change an action can acceptably emit in non-attainment and maintenance areas, these threshold values would also conservatively indicate an actions emissions within an attainment would also be acceptable. An air quality indicator value of 100 tons/yr is used based on the GCR de minimis threshold for the least severe non-attainment classification for all criteria pollutants (see 40 CFR 93.153). Therefore, the worst-case year emissions were compared against the GCR Indicator and are summarized below.

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA) – PROPOSED ACTION

Analysis Summary:

Construction and Demolition Year

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	16.427	100	No
NOx	12.193	100	No
CO	8.747	100	No
SOx	0.022	100	No
PM 10	39.529	100	No
PM 2.5	0.553	100	No
Pb	0.000	100	No
NH3	0.007	100	No
CO2e	2140.2		

Operational Years

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	7.254	100	No
NOx	136.491	100	Yes
CO	88.044	100	No
SOx	9.583	100	No
PM 10	1.256	100	No
PM 2.5	1.183	100	No
Pb	0.000	100	No
NH3	0.080	100	No
CO2e	30271.5		

Some estimated emissions associated with this action are above the GCR indicators, indicating a significant impact to air quality; therefore, further air assessment was provided in the air quality analysis of the EA.

Timothy Lavallee, P.E.
Contractor (LPES, Inc.)
Author of Air Quality Section

June 27, 2018
DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT
PROPOSED ACTION

1. General Information

- Action Location
Base: FAIRCHILD AFB
County(s): Spokane
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Proposed Action – Fairchild AFB

- Project Number/s (if applicable): Increased operations, construction/renovation, demolition

- Projected Action Start Date: 1 / 2018

- Action Purpose and Need:
KC-135R Beddown with 2 Alternatives
Fairchild AFB
MacDill AFB

- Action Description: See Section 2 of the EA.

- Point of Contact
Name: -
Title: -
Organization: -
Email: -
Phone Number: -

- Activity List:

Activity Type		Activity Title
2.	Aircraft	12 additional KC 135s
3.	Construction / Demolition	Construction and Demolition
4.	Personnel	Fairchild AFB KC-135 Beddown
5.	Heating	Heating

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Spokane
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 12 additional KC 135s

- Activity Description:

- Activity Start Date
Start Month: 1
Start Year: 2019

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT
PROPOSED ACTION

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	5.985677
SO_x	9.572663
NO_x	135.047654
CO	73.455288
PM 10	1.202993

Pollutant	Emissions Per Year (TONs)
PM 2.5	1.133803
Pb	0.000000
NH_3	0.000000
CO_2e	28732.1

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	4.058827
SO_x	9.077396
NO_x	99.498808
CO	67.640407
PM 10	0.507082

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.459047
Pb	0.000000
NH_3	0.000000
CO_2e	27694.6

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)
VOC	1.926849
SO_x	0.495267
NO_x	35.548846
CO	5.814881
PM 10	0.695911

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.674756
Pb	0.000000
NH_3	0.000000
CO_2e	1037.4

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: KC-135R
Engine Model: CFM56-2B-1
Primary Function: Transport - Bomber
Number of Engines: 4

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1015.88	2.11	1.06	4.00	30.70	0.07	0.06	3234
Approach	2468.27	0.09	1.06	8.20	4.20	0.06	0.05	3234
Intermediate	6500.04	0.06	1.06	16.00	0.90	0.05	0.05	3234
Military	7817.51	0.05	1.06	18.50	0.90	0.07	0.06	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

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2.3 Flight Operations

2.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:	12
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft:	983
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft:	3988
Number of Annual Trim Test(s) per Aircraft:	24

- Default Settings Used: Yes

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out (mins):	32.8 (default)
Takeoff (mins):	0.7 (default)
Climb Out (mins):	1.6 (default)
Approach (mins):	5.2 (default)
Taxi/Idle In (mins):	14.9 (default)

- Trim Test

Idle (mins):	12 (default)
Approach (mins):	27 (default)
Intermediate (mins):	9 (default)
Military (mins):	12 (default)
AfterBurn (mins):	0 (default)

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)

60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

2.5 Aerospace Ground Equipment (AGE)

2.5.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 983

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
1	0.33	No	Air Compressor	MC-1A - 18.4hp
1	2	No	Air Conditioner	MA-3C
1	10	No	Generator Set	A/M32A-86D
1	5	No	Heater	H1
1	2	No	Light Cart	NF-2
1	1	No	Start Cart	A/M32A-60A

2.5.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
MC-1A - 18.4hp	1.1	0.267	0.008	0.419	0.267	0.071	0.068	24.8
MA-3C	7.1	0.053	0.050	4.167	0.317	0.109	0.105	161.7
A/M32A-86D	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
H1	0.4	0.100	0.011	0.160	0.180	0.006	0.006	8.9
NF-2	0.0	0.010	0.043	0.110	0.080	0.010	0.010	22.1
A/M32A-60A	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

2.5.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year
$AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000$

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)
AGE: Total Number of Aerospace Ground Equipment
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

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3. Construction / Demolition

3.1 General Information & Timeline Assumptions

- Activity Location
County: Spokane
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Construction and Demolition

- Activity Description:
Construction and Demolition

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	16.427139
SO_x	0.021715
NO_x	12.193005
CO	8.747108
PM 10	39.529078

Pollutant	Total Emissions (TONs)
PM 2.5	0.553449
Pb	0.000000
NH_3	0.006755
CO_2e	2140.2

3.1 Demolition Phase

3.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

3.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 471435
Height of Building to be demolished (ft): 12.67

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	3	8
Rubber Tired Dozers Composite	2	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0848	0.0013	0.5180	0.5159	0.0249	0.0249	0.0076	119.77
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.339	000.002	000.292	003.662	000.010	000.008		000.025	00338.542
LDGT	000.436	000.003	000.505	005.311	000.012	000.011		000.027	00438.929
HDGV	000.855	000.005	001.379	018.249	000.029	000.025		000.045	00768.870
LDDV	000.134	000.003	000.151	002.379	000.004	000.004		000.008	00329.716
LDDT	000.336	000.004	000.495	004.740	000.007	000.007		000.008	00480.968
HDDV	000.589	000.013	006.184	002.023	000.223	000.205		000.029	01505.080
MC	002.361	000.003	000.826	013.943	000.029	000.026		000.053	00399.517

3.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD} = (0.00042 * BA * BH) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment

WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3.2 Site Grading Phase

3.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 3
Number of Days: 0

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3.2.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft^2): 1263080
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

- Site Grading Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Scrapers Composite	3	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.2.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0848	0.0013	0.5180	0.5159	0.0249	0.0249	0.0076	119.77
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2135	0.0026	1.6041	0.8417	0.0653	0.0653	0.0192	262.96
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.339	000.002	000.292	003.662	000.010	000.008		000.025	00338.542
LDGT	000.436	000.003	000.505	005.311	000.012	000.011		000.027	00438.929
HDGV	000.855	000.005	001.379	018.249	000.029	000.025		000.045	00768.870
LDDV	000.134	000.003	000.151	002.379	000.004	000.004		000.008	00329.716
LDDT	000.336	000.004	000.495	004.740	000.007	000.007		000.008	00480.968
HDDV	000.589	000.013	006.184	002.023	000.223	000.205		000.029	01505.080
MC	002.361	000.003	000.826	013.943	000.029	000.026		000.053	00399.517

3.2.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3.3 Trenching/Excavating Phase

3.3.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 3
Number of Days: 0

3.3.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 795
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

- Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.3.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0848	0.0013	0.5180	0.5159	0.0249	0.0249	0.0076	119.77
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2135	0.0026	1.6041	0.8417	0.0653	0.0653	0.0192	262.96
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.339	000.002	000.292	003.662	000.010	000.008		000.025	00338.542
LDGT	000.436	000.003	000.505	005.311	000.012	000.011		000.027	00438.929
HDGV	000.855	000.005	001.379	018.249	000.029	000.025		000.045	00768.870
LDDV	000.134	000.003	000.151	002.379	000.004	000.004		000.008	00329.716
LDDT	000.336	000.004	000.495	004.740	000.007	000.007		000.008	00480.968
HDDV	000.589	000.013	006.184	002.023	000.223	000.205		000.029	01505.080
MC	002.361	000.003	000.826	013.943	000.029	000.026		000.053	00399.517

3.3.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3.4 Building Construction Phase

3.4.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

3.4.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 240494
Height of Building (ft): 12.67

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PROPOSED ACTION

Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	7
Forklifts Composite	2	7
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8
Welders Composite	3	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

3.4.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Cranes Composite								
Emission Factors	0.1012	0.0013	0.7908	0.4059	0.0318	0.0318	0.0091	128.85
Forklifts Composite								
Emission Factors	0.0371	0.0006	0.2186	0.2173	0.0101	0.0101	0.0033	54.479
Generator Sets Composite								
Emission Factors	0.0477	0.0006	0.3758	0.2785	0.0191	0.0191	0.0043	61.100
Tractors/Loaders/Backhoes Composite								
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912
Welders Composite								
Emission Factors	0.0387	0.0003	0.1940	0.1876	0.0133	0.0133	0.0034	25.690

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.339	000.002	000.292	003.662	000.010	000.008		000.025	00338.542
LDGT	000.436	000.003	000.505	005.311	000.012	000.011		000.027	00438.929
HDGV	000.855	000.005	001.379	018.249	000.029	000.025		000.045	00768.870
LDDV	000.134	000.003	000.151	002.379	000.004	000.004		000.008	00329.716
LDDT	000.336	000.004	000.495	004.740	000.007	000.007		000.008	00480.968
HDDV	000.589	000.013	006.184	002.023	000.223	000.205		000.029	01505.080
MC	002.361	000.003	000.826	013.943	000.029	000.026		000.053	00399.517

3.4.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3.5 Architectural Coatings Phase

3.5.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 3
Number of Days: 0

3.5.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category:
Total Square Footage (ft^2): 1263080
Number of Units: N/A

- Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.5.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.339	000.002	000.292	003.662	000.010	000.008		000.025	00338.542
LDGT	000.436	000.003	000.505	005.311	000.012	000.011		000.027	00438.929
HDGV	000.855	000.005	001.379	018.249	000.029	000.025		000.045	00768.870
LDDV	000.134	000.003	000.151	002.379	000.004	000.004		000.008	00329.716
LDDT	000.336	000.004	000.495	004.740	000.007	000.007		000.008	00480.968
HDDV	000.589	000.013	006.184	002.023	000.223	000.205		000.029	01505.080
MC	002.361	000.003	000.826	013.943	000.029	000.026		000.053	00399.517

3.5.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

3.6 Paving Phase

3.6.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 3
Number of Days: 0

3.6.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 409451

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- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Pavers Composite	1	8
Paving Equipment Composite	2	6
Rollers Composite	2	6

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.6.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0848	0.0013	0.5180	0.5159	0.0249	0.0249	0.0076	119.77
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2135	0.0026	1.6041	0.8417	0.0653	0.0653	0.0192	262.96
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.339	000.002	000.292	003.662	000.010	000.008		000.025	00338.542
LDGT	000.436	000.003	000.505	005.311	000.012	000.011		000.027	00438.929
HDGV	000.855	000.005	001.379	018.249	000.029	000.025		000.045	00768.870
LDDV	000.134	000.003	000.151	002.379	000.004	000.004		000.008	00329.716
LDDT	000.336	000.004	000.495	004.740	000.007	000.007		000.008	00480.968
HDDV	000.589	000.013	006.184	002.023	000.223	000.205		000.029	01505.080
MC	002.361	000.003	000.826	013.943	000.029	000.026		000.053	00399.517

3.6.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)

PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

4. Personnel

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Spokane
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Fairchild AFB KC-135 Beddown

- Activity Description:
370 additional personnel

- Activity Start Date
Start Month: 1
Start Year: 2019

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	1.254966
SO_x	0.008357
NO_x	1.194439
CO	14.379437
PM 10	0.033666

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.030311
Pb	0.000000
NH_3	0.079979
CO_2e	1239.5

4.2 Personnel Assumptions

- Number of Personnel
Active Duty Personnel: 370
Civilian Personnel: 185
Support Contractor Personnel: 0
Air National Guard (ANG) Personnel: 0
Reserve Personnel: 0

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile): 20 (default)

- Personnel Work Schedule
Active Duty Personnel: 5 Days Per Week (default)
Civilian Personnel: 5 Days Per Week (default)
Support Contractor Personnel: 5 Days Per Week (default)
Air National Guard (ANG) Personnel: 4 Days Per Week (default)
Reserve Personnel: 4 Days Per Month (default)

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PROPOSED ACTION

4.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

4.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.305	000.002	000.252	003.454	000.009	000.008		000.024	00329.670
LDGT	000.389	000.003	000.438	004.893	000.011	000.010		000.025	00426.333
HDGV	000.775	000.005	001.216	016.893	000.027	000.023		000.045	00765.945
LDDV	000.127	000.003	000.140	002.378	000.004	000.004		000.008	00319.522
LDDT	000.298	000.004	000.435	004.410	000.007	000.007		000.008	00459.913
HDDV	000.541	000.013	005.618	001.874	000.194	000.179		000.028	01491.701
MC	002.348	000.003	000.824	013.752	000.029	000.025		000.054	00399.619

4.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year

$VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year)
NP: Number of Personnel
WD: Work Days per Year
AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_C: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year

$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{Total}: Total Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Personnel On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT
PROPOSED ACTION

5. Heating

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Spokane
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Heating

- Activity Description:

- Activity Start Date
Start Month: 1
Start Year: 2019

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.013703
SO_x	0.001495
NO_x	0.249154
CO	0.209290
PM 10	0.018936

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.018936
Pb	0.000000
NH_3	0.000000
CO_2e	300.0

5.2 Heating Assumptions

- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 77400
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hr)
Heat Value ($MMBtu/ft^3$): 0.00105
Energy Intensity ($MMBtu/ft^2$): 0.0676

- Default Settings Used: Yes

- Boiler/Furnace Usage
Operating Time Per Year (hours): 900 (default)

5.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

5.4 Heating Formula(s)

- Heating Fuel Consumption ft^3 per Year

FC_{HER}= HA * EI / HV / 1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement ($MMBtu/ft^2$)
HV: Heat Value ($MMBTU/ft^3$)
1000000: Conversion Factor

- Heating Emissions per Year

HE_{POL}= FC * EF_{POL} / 2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA) – MACDILL AFB ALTERNATIVE

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:
Base: MACDILL AFB
County(s): Hillsborough
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: MacDill AFB Alternative

c. Project Number/s (if applicable): Increased operations, construction/renovation, demolition

d. Projected Action Start Date: 1 / 2018

e. Action Description: See Section 2 of EA.

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable
__X__ not applicable

Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions.

"Air Quality Indicators" were used to provide an indication of the significance of potential impacts to air quality. These air quality indicators are EPA General Conformity Rule (GCR) thresholds (de minimis levels) that are applied out of context to their intended use. Therefore, these indicators do not trigger a regulatory requirement; however, they provide a warning that the action is potentially significant. It is important to note that these indicators only provide a clue to the potential impacts to air quality.

Given the GCR de minimis threshold values are the maximum net change an action can acceptably emit in non-attainment and maintenance areas, these threshold values would also conservatively indicate an actions emissions within an attainment would also be acceptable. An air quality indicator value of 100 tons/yr is used based on the GCR de minimis threshold for the least severe non-attainment classification for all criteria pollutants (see 40 CFR 93.153). Therefore, the worst-case year emissions were compared against the GCR Indicator and are summarized below.

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA) – MACDILL AFB ALTERNATIVE

Analysis Summary:

Construction and Demolition Year

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	39.300	100	No
NOx	10.889	100	No
CO	7.890	100	No
SOx	0.021	100	No
PM 10	57.602	100	No
PM 2.5	0.491	100	No
Pb	0.000	100	No
NH3	0.014	100	No
CO2e	2124.4		

Operational Years

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	13.754	100	No
NOx	255.634	100	Yes
CO	164.471	100	Yes
SOx	17.867	100	No
PM 10	2.498	100	No
PM 2.5	2.360	100	No
Pb	0.000	100	No
NH3	0.085	100	No
CO2e	55341.5		

Some estimated emissions associated with this action are above the GCR indicators, indicating a significant impact to air quality; therefore, further air assessment was provided in the air quality analysis of the EA.

Timothy Lavallee, P.E.
Contractor (LPES, Inc.)
Author of Air Quality Section

June 27, 2018
DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT
MACDILL AFB ALTERNATIVE

1. General Information

- Action Location
Base: MACDILL AFB
County(s): Hillsborough
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: MacDill AFB Alternative

- Project Number/s (if applicable): Increased operations, construction/renovation, demolition

- Projected Action Start Date: 1 / 2018

- Action Purpose and Need:
KC-135R Beddown with 2 Alternatives
Fairchild AFB
MacDill AFB

- Action Description: See Section 2 of the EA.

- Point of Contact
Name: -
Title: -
Organization: -
Email: -
Phone Number: -

- Activity List:

Activity Type		Activity Title
2.	Aircraft	12 Additional KC-135
3.	Construction / Demolition	Construction and Demolition
4.	Personnel	Additional Personnel
5.	Heating	Heating

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Hillsborough
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 12 Additional KC-135

- Activity Description:

- Activity Start Date
Start Month: 1
Start Year: 2019

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT
MACDILL AFB ALTERNATIVE

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	12.387644
SO_x	17.854868
NO_x	253.894629
CO	148.718644
PM 10	2.427188

Pollutant	Emissions Per Year (TONs)
PM 2.5	2.292784
Pb	0.000000
NH_3	0.000000
CO_2e	53460.1

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	8.261481
SO_x	16.794301
NO_x	177.770193
CO	136.266636
PM 10	0.936961

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.847858
Pb	0.000000
NH_3	0.000000
CO_2e	51238.5

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)
VOC	4.126163
SO_x	1.060567
NO_x	76.124435
CO	12.452008
PM 10	1.490227

Pollutant	Emissions Per Year (TONs)
PM 2.5	1.444925
Pb	0.000000
NH_3	0.000000
CO_2e	2221.6

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: KC-135R
Engine Model: CFM56-2B-1
Primary Function: Transport - Bomber
Number of Engines: 4

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1015.88	2.11	1.06	4.00	30.70	0.07	0.06	3234
Approach	2468.27	0.09	1.06	8.20	4.20	0.06	0.05	3234
Intermediate	6500.04	0.06	1.06	16.00	0.90	0.05	0.05	3234
Military	7817.51	0.05	1.06	18.50	0.90	0.07	0.06	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:	12
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft:	2105
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft:	8580
Number of Annual Trim Test(s) per Aircraft:	24

- Default Settings Used: Yes

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out (mins):	32.8 (default)
Takeoff (mins):	0.7 (default)
Climb Out (mins):	1.6 (default)
Approach (mins):	5.2 (default)
Taxi/Idle In (mins):	14.9 (default)

- Trim Test

Idle (mins):	12 (default)
Approach (mins):	27 (default)
Intermediate (mins):	9 (default)
Military (mins):	12 (default)
AfterBurn (mins):	0 (default)

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)

60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

2.5 Aerospace Ground Equipment (AGE)

2.5.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 2105

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
1	0.33	No	Air Compressor	MC-1A - 18.4hp
1	2	No	Air Conditioner	MA-3C
1	10	No	Generator Set	A/M32A-86D
1	5	No	Heater	H1
1	2	No	Light Cart	NF-2
1	1	No	Start Cart	A/M32A-60A

2.5.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
MC-1A - 18.4hp	1.1	0.267	0.008	0.419	0.267	0.071	0.068	24.8
MA-3C	7.1	0.053	0.050	4.167	0.317	0.109	0.105	161.7
A/M32A-86D	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
H1	0.4	0.100	0.011	0.160	0.180	0.006	0.006	8.9
NF-2	0.0	0.010	0.043	0.110	0.080	0.010	0.010	22.1
A/M32A-60A	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

2.5.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year
$AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000$

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)
AGE: Total Number of Aerospace Ground Equipment
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT
MACDILL AFB ALTERNATIVE

3. Construction / Demolition

3.1 General Information & Timeline Assumptions

- Activity Location
County: Hillsborough
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Construction and Demolition

- Activity Description:
Construction and Demolition

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	39.299656
SO_x	0.020790
NO_x	10.888691
CO	7.889520
PM 10	57.601511

Pollutant	Total Emissions (TONs)
PM 2.5	0.491332
Pb	0.000000
NH_3	0.014286
CO_2e	2124.4

3.1 Demolition Phase

3.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

3.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 48500
Height of Building to be demolished (ft): 12.67

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0604	0.0006	0.3958	0.3850	0.0260	0.0260	0.0054	58.600
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.339	000.002	000.292	003.662	000.010	000.008		000.025	00338.542
LDGT	000.436	000.003	000.505	005.311	000.012	000.011		000.027	00438.929
HDGV	000.855	000.005	001.379	018.249	000.029	000.025		000.045	00768.870
LDDV	000.134	000.003	000.151	002.379	000.004	000.004		000.008	00329.716
LDDT	000.336	000.004	000.495	004.740	000.007	000.007		000.008	00480.968
HDDV	000.589	000.013	006.184	002.023	000.223	000.205		000.029	01505.080
MC	002.361	000.003	000.826	013.943	000.029	000.026		000.053	00399.517

3.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (0.00042 * BA * BH) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3.2 Site Grading Phase

3.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT
MACDILL AFB ALTERNATIVE

Start Year: 2018

- Phase Duration
Number of Month: 3
Number of Days: 0

3.2.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 1907800
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	2	8
Other Construction Equipment Composite	2	8
Rubber Tired Dozers Composite	2	8
Scrapers Composite	4	8
Tractors/Loaders/Backhoes Composite	2	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.2.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2135	0.0026	1.6041	0.8417	0.0653	0.0653	0.0192	262.96

Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.339	000.002	000.292	003.662	000.010	000.008		000.025	00338.542
LDGT	000.436	000.003	000.505	005.311	000.012	000.011		000.027	00438.929
HDGV	000.855	000.005	001.379	018.249	000.029	000.025		000.045	00768.870
LDDV	000.134	000.003	000.151	002.379	000.004	000.004		000.008	00329.716
LDDT	000.336	000.004	000.495	004.740	000.007	000.007		000.008	00480.968
HDDV	000.589	000.013	006.184	002.023	000.223	000.205		000.029	01505.080
MC	002.361	000.003	000.826	013.943	000.029	000.026		000.053	00399.517

3.2.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3.3 Trenching/Excavating Phase

3.3.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 3
Number of Days: 0

3.3.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 1276
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

- Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.3.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2135	0.0026	1.6041	0.8417	0.0653	0.0653	0.0192	262.96
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.339	000.002	000.292	003.662	000.010	000.008		000.025	00338.542
LDGT	000.436	000.003	000.505	005.311	000.012	000.011		000.027	00438.929
HDGV	000.855	000.005	001.379	018.249	000.029	000.025		000.045	00768.870
LDDV	000.134	000.003	000.151	002.379	000.004	000.004		000.008	00329.716
LDDT	000.336	000.004	000.495	004.740	000.007	000.007		000.008	00480.968
HDDV	000.589	000.013	006.184	002.023	000.223	000.205		000.029	01505.080
MC	002.361	000.003	000.826	013.943	000.029	000.026		000.053	00399.517

3.3.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3.4 Building Construction Phase

3.4.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

3.4.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 1628940

Height of Building (ft): 12.67
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	7
Forklifts Composite	3	8
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	3	7
Welders Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

3.4.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1012	0.0013	0.7908	0.4059	0.0318	0.0318	0.0091	128.85
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0371	0.0006	0.2186	0.2173	0.0101	0.0101	0.0033	54.479
Generator Sets Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0477	0.0006	0.3758	0.2785	0.0191	0.0191	0.0043	61.100
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912
Welders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0387	0.0003	0.1940	0.1876	0.0133	0.0133	0.0034	25.690

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.339	000.002	000.292	003.662	000.010	000.008		000.025	00338.542
LDGT	000.436	000.003	000.505	005.311	000.012	000.011		000.027	00438.929
HDGV	000.855	000.005	001.379	018.249	000.029	000.025		000.045	00768.870
LDDV	000.134	000.003	000.151	002.379	000.004	000.004		000.008	00329.716
LDDT	000.336	000.004	000.495	004.740	000.007	000.007		000.008	00480.968
HDDV	000.589	000.013	006.184	002.023	000.223	000.205		000.029	01505.080
MC	002.361	000.003	000.826	013.943	000.029	000.026		000.053	00399.517

3.4.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3.5 Architectural Coatings Phase

3.5.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 3
Number of Days: 0

3.5.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category:
Total Square Footage (ft^2): 3257880
Number of Units: N/A

- Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.5.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.339	000.002	000.292	003.662	000.010	000.008		000.025	00338.542
LDGT	000.436	000.003	000.505	005.311	000.012	000.011		000.027	00438.929
HDGV	000.855	000.005	001.379	018.249	000.029	000.025		000.045	00768.870
LDDV	000.134	000.003	000.151	002.379	000.004	000.004		000.008	00329.716
LDDT	000.336	000.004	000.495	004.740	000.007	000.007		000.008	00480.968
HDDV	000.589	000.013	006.184	002.023	000.223	000.205		000.029	01505.080
MC	002.361	000.003	000.826	013.943	000.029	000.026		000.053	00399.517

3.5.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

3.6 Paving Phase

3.6.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration

Number of Month: 3
Number of Days: 0

3.6.2 Paving Phase Assumptions

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT
MACDILL AFB ALTERNATIVE

- General Paving Information
Paving Area (ft^2): 22000

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.6.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2135	0.0026	1.6041	0.8417	0.0653	0.0653	0.0192	262.96
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.339	000.002	000.292	003.662	000.010	000.008		000.025	00338.542
LDGT	000.436	000.003	000.505	005.311	000.012	000.011		000.027	00438.929
HDGV	000.855	000.005	001.379	018.249	000.029	000.025		000.045	00768.870
LDDV	000.134	000.003	000.151	002.379	000.004	000.004		000.008	00329.716
LDDT	000.336	000.004	000.495	004.740	000.007	000.007		000.008	00480.968
HDDV	000.589	000.013	006.184	002.023	000.223	000.205		000.029	01505.080
MC	002.361	000.003	000.826	013.943	000.029	000.026		000.053	00399.517

3.6.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / $acre)^2$ / acre)

4. Personnel

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Hillsborough
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Additional Personnel

- Activity Description:

- Activity Start Date
Start Month: 1
Start Year: 2019

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	1.340892
SO_x	0.008929
NO_x	1.276221
CO	15.363975
PM 10	0.035972

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.032386
Pb	0.000000
NH_3	0.085455
CO_2e	1324.4

4.2 Personnel Assumptions

- Number of Personnel
Active Duty Personnel: 395
Civilian Personnel: 198
Support Contractor Personnel: 0
Air National Guard (ANG) Personnel: 0
Reserve Personnel: 0

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile): 20 (default)

- Personnel Work Schedule

Active Duty Personnel:	5 Days Per Week (default)
Civilian Personnel:	5 Days Per Week (default)
Support Contractor Personnel:	5 Days Per Week (default)
Air National Guard (ANG) Personnel:	4 Days Per Week (default)
Reserve Personnel:	4 Days Per Month (default)

4.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

4.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.305	000.002	000.252	003.454	000.009	000.008		000.024	00329.670
LDGT	000.389	000.003	000.438	004.893	000.011	000.010		000.025	00426.333
HDGV	000.775	000.005	001.216	016.893	000.027	000.023		000.045	00765.945
LDDV	000.127	000.003	000.140	002.378	000.004	000.004		000.008	00319.522
LDDT	000.298	000.004	000.435	004.410	000.007	000.007		000.008	00459.913
HDDV	000.541	000.013	005.618	001.874	000.194	000.179		000.028	01491.701
MC	002.348	000.003	000.824	013.752	000.029	000.025		000.054	00399.619

4.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year

$VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year)
NP: Number of Personnel
WD: Work Days per Year
AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_C: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year

$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{Total}: Total Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Personnel On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

5. Heating

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Hillsborough
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Heating

- Activity Description:

- Activity Start Date
Start Month: 1
Start Year: 2019

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.025450
SO_x	0.002776
NO_x	0.462726
CO	0.388690
PM 10	0.035167

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.035167
Pb	0.000000
NH_3	0.000000
CO_2e	557.1

5.2 Heating Assumptions

- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 117500
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hr)
Heat Value ($MMBtu/ft^3$): 0.00105
Energy Intensity ($MMBtu/ft^2$): 0.0827

- Default Settings Used: Yes

- Boiler/Furnace Usage
Operating Time Per Year (hours): 900 (default)

5.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

5.4 Heating Formula(s)

- Heating Fuel Consumption ft^3 per Year

FC_{HER}= HA * EI / HV / 1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement ($MMBtu/ft^2$)
HV: Heat Value ($MMBTU/ft^3$)
1000000: Conversion Factor

- Heating Emissions per Year

HE_{POL}= FC * EF_{POL} / 2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

C

Federal Coastal Zone Management Act Consistency Determination

Introduction

This document provides the State of Florida with the U.S. Air Force's (USAF's) Federal Consistency Determination under the Coastal Zone Management Act (CZMA) § 307 and 15 Code of Federal Regulations (CFR) § 930 Subpart C. The information in this Consistency Determination is provided pursuant to 15 CFR 930.39 and § 307 of the CZMA, 16 United States Code § 1456, as amended, and its implementing regulations at 15 CFR § 930.

Proposed Federal Agency Action

This Federal Consistency Determination addresses the addition of 12 KC-135 Stratotanker (KC-135) aircraft to the existing fleet of KC-135s at MacDill Air Force Base (AFB). The addition of these aircraft to MacDill AFB would constitute activation of a new air refueling squadron and would include an increase of KC-135 aircraft; associated personnel and dependents; operations and maintenance activities; and facility construction, demolition, and renovation.

The MacDill AFB Alternative would add 12 KC-135s to the installation, resulting in a total of 36 KC-135s stationed at the installation. An approximate 1,035 USAF personnel and dependents would accompany the KC-135s, representing a 2.5 percent increase to MacDill AFB's population. Annual operations by KC-135 aircraft would increase by 50 percent and would use existing airspace and training areas currently utilized by KC-135s. There would be a corresponding 50 percent increase in aircraft maintenance activities following the addition of the 12 KC-135s. Facility construction, demolition, and renovation would be required to support operations and maintenance of the additional KC-135s and to provide parking, housing, and office space for associated personnel. One building would be demolished to create space for a new squadron operations facility. New construction would also include expansion of the parking lot associated with the squadron operations facility, a fitness center addition, a fuel cell hangar, and a warehouse facility. Interior renovations would occur at four facilities, and renovations in the form of pavement repair and upgrades to the fuel hydrant system would occur on the North Ramp. Overall, the MacDill AFB Alternative would disturb no more than 1,699,440 square feet; however, this area could be smaller because some construction and demolition projects overlap with one another and the proposed renovations to one hangar and the North Ramp would likely occur on a small fraction of the total area of these facilities. The MacDill AFB Alternative would increase the total amount of impervious surfaces on the installation by 104,500 square feet.

The purpose of the MacDill AFB Alternative is to continue to provide Air Mobility Command continental U.S. active duty locations with fully capable air refueling assets to accomplish air refueling and related missions. The MacDill AFB Alternative is needed because USAF must comply with the force adjustments enacted through the fiscal year 2017 National Defense Authorization Act to redistribute 12 KC-135s within the continental United States in fiscal year 2020. USAF needs a viable location to conduct the operations and maintenance activities associated with these 12 KC-135s.

Federal Review

The Florida Statutes addressed as part of the Florida Coastal Management Program consistency review and considered in the analysis of the MacDill AFB Alternative are discussed in **Table C-1**.

Based on the information and analysis provided in **Table C-1**, MacDill AFB finds that the MacDill AFB Alternative under which 12 KC-135 aircraft would be added to the existing fleet of KC-135s is consistent with the applicable enforceable policies and mechanisms of the Florida Coastal Management Program.

Pursuant to 15 CFR 930.41, the Florida State Clearinghouse has 60 days from receipt of this document to concur with, or object to, this Consistency Determination, or to request an extension in writing under 15 CFR 930.41(b). Florida's concurrence will be presumed if MacDill AFB does not receive its response by the 60th day from receipt of this determination.

Table C-1. Florida Coastal Management Program Federal Consistency Review

Statute	Scope	Consistency
Chapter 161, F.S. *Beach and Shore Preservation*	Authorizes the Florida Department of Environmental Protection to regulate construction on or seaward of the state's beaches.	The MacDill AFB Alternative would not impact coastal areas, including beach and shore management, because there would be no construction or other activities occurring on or near beach areas.
Chapter 163, F.S. *Intergovernmental Programs: Growth Policy; County and Municipal Planning; Land Development Regulation*	Requires local governments to prepare, adopt, and implement comprehensive plans that encourage the most appropriate use of land and natural resources in a manner that is consistent with the public interest.	The MacDill AFB Alternative would not impact local government comprehensive plans. Local and regional agencies will be provided the opportunity to review the Draft Environmental Assessment (EA).
Chapter 186, F.S. *State and Regional Planning*	Details state-level planning requirements. Requires the development of special statewide plans governing water use, land development, and transportation.	The MacDill AFB Alternative would not impact or interfere with the development of state plans for water use, land development, and transportation. State agencies will be provided the opportunity to review the Draft EA.
Chapter 252, F.S. *Emergency Management*	Directs the state to reduce the vulnerability of its people and property to natural and manmade disasters; prepare for, respond to, and reduce the impacts of disasters; and decrease the time and resources needed when responding to disasters.	The MacDill AFB Alternative would not have an adverse impact on the ability of the state to manage and respond to natural and manmade disasters.
Chapter 253, F.S. *State Lands*	Provides the framework for conservation and protection of natural and cultural resources on state-owned lands.	The MacDill AFB Alternative would occur on federal property and use existing airspace; therefore, there would be no impact on state-owned lands.
Chapter 258, F.S. *State Parks and Preserves*	Addresses administration and management of state parks, preserves, and recreation areas.	The MacDill AFB Alternative would not impact state parks, preserves, or recreational areas.
Chapter 259, F.S. *Land Acquisitions for Conservation or Recreation*	Authorizes acquisition of environmentally endangered lands and outdoor recreation lands.	The MacDill AFB Alternative would not impact publicly owned lands used for tourism or outdoor recreation.

Statute	Scope	Consistency
Chapter 260, F.S. *Florida Greenways and Trails Act*	Authorizes acquisition of land to create a recreational trails system (Florida Greenways and Trails System) and to facilitate management of the system.	MacDill AFB's existing noise contours and those anticipated after implementation of the MacDill AFB Alternative would overlap with existing walking trails within the Florida Greenways and Trails System as well as trail opportunities and priority corridors. Although Chapter 260 F.S. does not contain any enforceable policies for federal consistency purposes, the MacDill AFB Alternative would not include the acquisition of land or preclude the implementation, growth, and use of the Florida Greenways and Trails System and would not impact the Greenways and Trails Program.
Chapter 267, F.S. *Historical Resources*	Addresses management and preservation of the state's archaeological and historical resources.	The MacDill AFB Alternative would impact historical resources from interior renovations to a facility that is individually eligible for National Register of Historic Places listing and is a contributing resource of the MacDill Field Historic District and from construction activities within the historic district. However, no adverse effects under Section 106 of the National Historic Preservation Act would occur because such interior renovations have occurred periodically throughout the facility's history and the proposed renovations would not adversely impact its eligibility for National Register of Historic Places listing. Additionally, proposed new facilities would be designed to appear compatible with the MacDill Field Historic District's historic architectural styles and consistent with other recent buildings constructed within the district. USAF is satisfying its responsibilities under Section 106 of the National Historic Preservation Act concurrent with the National Environmental Policy Act process, as provided for in 36 CFR 800.8(a), by consulting with the Florida State Historic Preservation Officer. The MacDill AFB Alternative would not be expected to impact archaeological or traditional resources because no such properties have been identified within the area of potential effects.
Chapter 288, F.S. *Commercial Development and Capital Improvements*	Provides the framework for promoting and developing the general business, trade, and tourism components of the state economy.	The MacDill AFB Alternative would not have adverse impacts on Florida industries or economic diversification efforts.

Statute	Scope	Consistency
Chapter 334, F.S. *Transportation Administration*	Addresses the transportation administration policies of the state.	Short-term, negligible impacts are anticipated on the transportation network at MacDill AFB from construction vehicles, which would compose a small percentage of the total existing traffic. Long-term, negligible to minor impacts could result from the increase in personnel and dependents and potential increased congestion that would primarily occur at access gates during peak hours. No permanent impacts or alterations to the transportation network would occur.
Chapter 339, F.S. *Transportation Finance and Planning*	Addresses the state's transportation systems finance and planning needs.	The MacDill AFB Alternative would not impact the finance and planning needs of the state's transportation system.
Chapter 373, F.S. *Water Resources*	Addresses conservation and preservation of water resources, water quality, and environmental quality.	The MacDill AFB Alternative would not result in a significant impact on water resources. Short-term, minor impacts during construction, demolition, and North Ramp renovation projects from sedimentation and long-term, minor impacts from the increased rate and volume of stormwater runoff because of an increase in impervious surfaces would occur. However, impacts would be minimized through implementation of environmental protection and best management practices and by following the project-specific and the installation Stormwater Pollution Prevention Plans. All applicable permits would be coordinated in accordance with Florida's statutes and the National Pollutant Discharge Elimination System. Therefore, the MacDill AFB Alternative would be consistent with Florida's statutes and regulations regarding the water resources of the state.
Chapter 375, F.S. *Outdoor Recreation and Conservation Lands*	Addresses the development of a comprehensive multipurpose outdoor recreation plan.	The MacDill AFB Alternative would not impact opportunities for outdoor recreation on state lands.
Chapter 376, F.S. *Pollutant Discharge Prevention and Removal*	Regulates the transfer, storage, and transportation of pollutants, and cleanup of pollutant discharges.	All petroleum, oils, and lubricants would be managed through implementation of the installation's Spill Prevention, Control, and Countermeasures Plan and handling, storage, transportation, and disposal activities would be conducted in accordance with applicable federal, state, and local regulations; USAF Instructions; and the MacDill AFB Hazardous Waste Management Plan.
Chapter 377, F.S. *Energy Resources*	Addresses the regulation, planning, and development of oil and gas resources of the state.	The proposed facilities would tie into existing utility lines at MacDill AFB. The MacDill AFB Alternative would not affect energy resource production, including oil and gas, or the transportation of oil and gas.

Statute	Scope	Consistency
Chapter 379, F.S. *Fish and Wildlife Conservation*	Addresses the management of the wildlife resources of the state.	The MacDill AFB Alternative would occur in improved or semi-improved areas that provide habitat for few native wildlife species. The MacDill Alternative may affect, but is not likely to adversely affect, the following federally protected and sensitive species: the red knot, piping plover, and wood stork. State-listed species that could incur similar affects include Scott's seaside sparrow, snowy plover, little blue heron, reddish egret, tricolored heron, American oystercatcher, roseate spoonbill, and black skimmer. Measures to minimize potential impacts on these species are discussed in the EA. The MacDill AFB Alternative would result in no effects on the federally listed Florida scrub jay, red-cockaded woodpecker, eastern indigo snake, Atlantic sturgeon, and all sea turtle and plant species. Suitable habitat for the gopher tortoise, Florida pine snake, short-tailed snake, and burrowing owl occurs near the areas of the MacDill AFB Alternative; however, there are no burrows within the footprints of disturbance.
Chapter 380, F.S. *Land and Water Management*	Establishes state land and water management policies to guide and coordinate local decisions relating to growth and development.	The MacDill AFB Alternative would be consistent with state and local policies regarding growth and development. It would not include changes to coastal infrastructure such as capacity increases of existing coastal infrastructure or use of state funds for infrastructure planning, designing, or construction. The City of Tampa continues to implement land use policies that are compatible with the installation in its planning efforts, and the latest Comprehensive Plan for the City of Tampa includes policies and objectives meant to support and strengthen the role of MacDill AFB.
Chapter 381, F.S. *Public Health: General Provisions*	Establishes public policy concerning the state's public health system.	The MacDill AFB Alternative would not impact the state's policy concerning the public health system.
Chapter 388, F.S. *Mosquito Control*	Addresses mosquito control efforts in the state.	The MacDill AFB Alternative would not impact mosquito control efforts.
Chapter 403, F.S. *Environmental Control*	Establishes public policy concerning environmental control (i.e., pollution control) in the state.	The MacDill AFB Alternative would have negligible impacts on groundwater and surface water quality and quantity; protection of potable water supply; air quality; floodplains and wetlands; and the conservation of environmentally sensitive living resources. Minimization measures for these impacts are identified in the EA.
Chapter 553, F.S. *Building Construction Standards*	Addresses building construction standards for a unified Florida Building Code.	The MacDill AFB Alternative would comply with the state's construction standards.

Statute	Scope	Consistency
Chapter 582, F.S. *Soil and Water Conservation*	Provides for the control and prevention of soil erosion.	Soil disturbance would occur during construction, demolition, and North Ramp renovation projects, but would be controlled through implementation of environmental protection measures and best management practices. Additionally, adherence to site-specific Erosion and Sediment Control Plans, both site-specific and installation Stormwater Pollution Prevention Plans, and Section 438 of the Energy Independence and Security Act would further minimize impacts.
Chapter 597, F.S. *Aquaculture*	Establishes public policy to enhance the growth of aquaculture.	The MacDill AFB Alternative would not impact aquaculture.

Key: F.S. = Florida Statute